

Land People
THE SAMANS

BY
PROBHAT KUMAR SEN



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LAND AND PEOPLE OF THE ANDAMANS

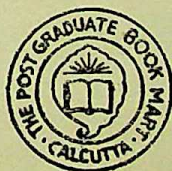
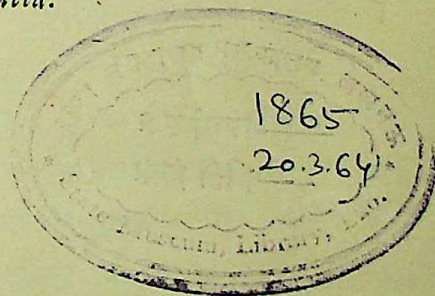
Land & People OF THE ANDAMANS

*(A Geographical & Socio-Economical Study
with a short account of the Nicobar Islands.)*

BY

SRI PROBHAT KUMAR SEN, M.Sc.

St. Xavier's College, Calcutta.



THE POST-GRADUATE BOOK MART
55, MAHATMA GANDHI ROAD,
CALCUTTA-9 (INDIA)

1962

© Published by Sri G. R. Bhattacharyya
The Post-Graduate Book Mart,
55, Mahatma Gandhi Road, Calcutta-9

Sole Agent :

ABINASH BHABAN

P.O. CHAMRAIL. Dist. HOWRAH
WEST BENGAL, INDIA

FIRST PUBLISHED IN 1962

Printed by Jogesh Chandra Sarkhel at the Calcutta Oriental Press
Private Limited, 9, Panchanan Ghose Lane, Calcutta-9.



FOREWORD

Shri Probhat Kumar Sen, m.sc. has brought out an interesting monograph on the Land and People of the Andamans based on his field work for a number of years. As a post-graduate student Shri Sen selected this area for geographical study and prepared a thesis for his Master's degree. This appears to be the revised and detailed version of his thesis. The Andaman and Nicobar islands are in the Bay of Bengal, and prove to be an ideal spot for rehabilitating surplus population of India, provided it is done on a planned basis, keeping an eye to the potential wealth of the islands specially in its virgin forests. Shri Sen has referred to the salient features of the regional geography of the islands and traced the growth of population in these islands since the eighties of the last century.

I hope that this important treatise will focus the attention of all concerned to this relatively unknown underdeveloped islands, which have immense possibility of playing an important role in the economy of India.

*Dept. of Geography
Calcutta University
11th May, 1962*

S. P. CHATTERJEE



P R E F A C E

The dearth of literature but considerable curiosity about the islands because of the presence of the aborigines, the development of the penal colony and in recent years the colonisation of the refugees, have inspired the author to write a geographical treatise of these islands covering almost all their physical and socio-economic aspects. The interest of the author about these islands of course dates back to some 8 or 9 years for preparing a thesis about these islands as a part fulfilment of his M.Sc. course and the author with the limited time and money made some personal enquiries for the collection of data and the assessment of the situation. The access to the data and the other research materials and the visits to the different parts of the islands were possible through the kind permission and help of the-then Chief Commissioner Sri S. N. Maitra, the Forest Officers, the Head Master of Port Blair High School. Dr. L. Cipriani besides a host of other officers and friends in the islands and also at Calcutta. However the ultimate preparation of the thesis became possible for the kind guidance of Dr. S. P. Chatterjee, Head of the Dept of Geography, Calcutta University.

Anybody faces a tremendous problem in conducting a thorough survey of the islands arising out of the poor communication facilities both on land and water, and more so on account of the very few literatures on the islands. The author cannot demand a thorough enquiry in all parts of the islands and his analysis of the different aspects has been derived more from the conclusions of sample survey.

Though a long time has elapsed since the preparation of the thesis in the year 1955, the author has been, on the whole, eager to incorporate all the latest informations of the islands. The present book is partially a reproduction of his previous thesis with some additional facts and informations and the objective of such changes has been to prepare a comprehensive geographical treatise rather than focussing one particular aspect as was done in the thesis i.e. the colonisation problems of the islands. Besides this, additional chapters on the aboriginal population, the overall assessment and also a geographical account on the Nicobar Islands have been added. The Nicobar Islands, though form only a sidelight of the book, also command a separate geographical treat-

ment because of the altogether different character of the islands. In spite of such a distinctness in the geographic personality of the Nicobar Islands, only an introducing chapter has been given.

Never the islands with an area of 2508 square miles and with no fabulous wealth can be a land of Aladin's Lamp but the multiplicity of interest of the islands make them extremely interesting.

The book is published with the idea of providing a reference on all aspects of the islands, not only for the general readers but also for the research workers. If this book serves a little in removing the dismal obscurities of the islands by way of serving as a ready reference of the islands, the author will no doubt feel complacent.

Academic help and advice have been obtained from a large number of persons. For the preparation of the study on the aboriginal population, the author owes his debt of gratitude to Professor Nirmal Kumar Bose and Dr. S. S. Sarkar who have so kindly rendered their valuable help and guidance in this connection. Many of the photographs have so kindly been given by A. S. I. for incorporation within the book. The help, co-operation and suggestions have been derived from such a large number of persons that the author owes a tremendous debt of gratitude to all of them. Last but not the least, the author extends his sincere thanks to Sri G. R. Bhattacharyya for undertaking the pains of this arduous task of publication which has been continuing for a fairly long time.

PROBHAT KUMAR SEN



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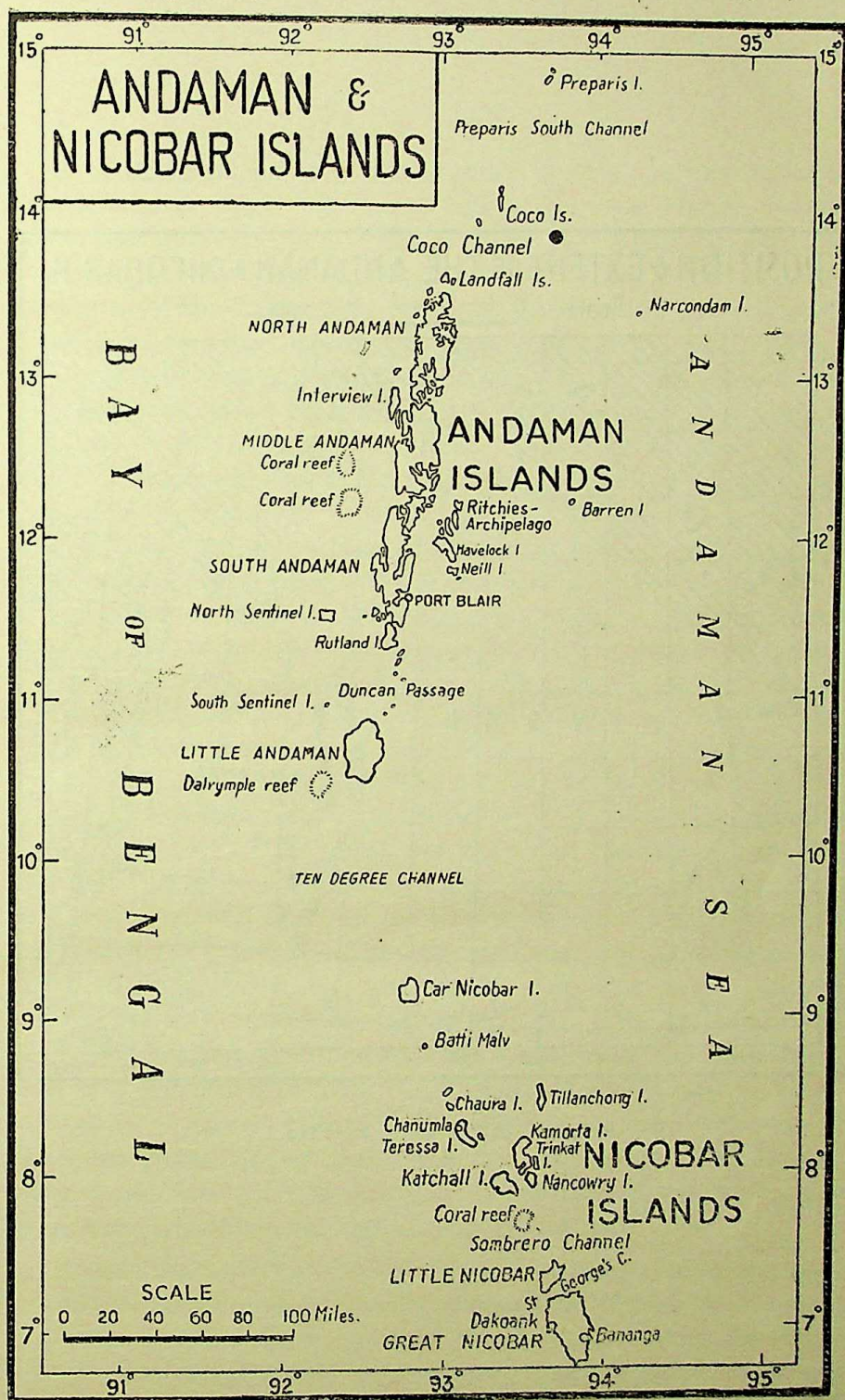
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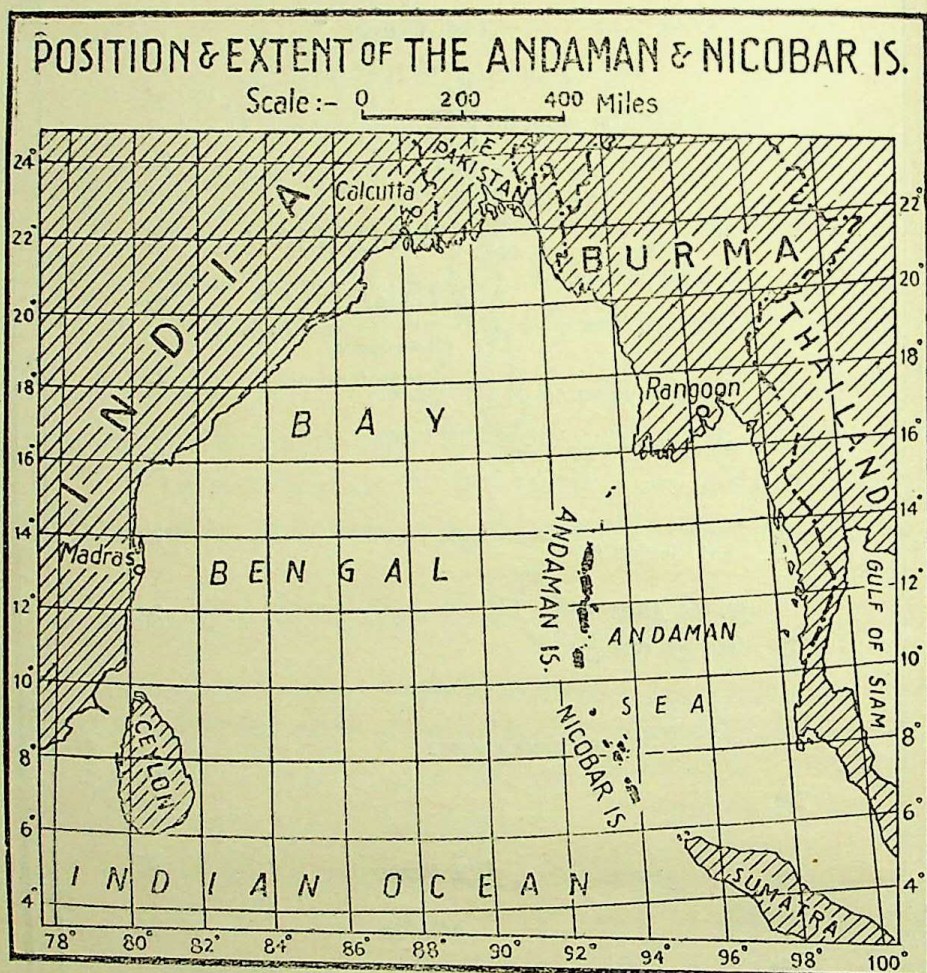
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INTRODUCTION

A group of north-south running islands as they are, the Andaman Islands have as many as 204 small islands where the impact of civilisation and growth has been little and the human history has been one of stagnation rather than of chequered career. Being a land of aborigines, the foreign intrusion has been quite feeble though mention about these islands is found in the early records of the travellers. Though the knowledge about the islands is derived from the notes which date back to 2nd Century A.D., the contacts with the foreigners have been all the time transient and extremely feeble. Before the formation of the penal settlement, the islands have been known as an island of horror because of the presence of such tribal people who would eat up the man they encounter and as regards the wealth there has been imaginary illusion, sometimes being called as the Island of Gold. The historical record of the islands which can be built with a fair degree of precision is since the formation of the penal settlement. There has been the search for resources as well as their exploitation. However, all the attempts for finding minerals and the geological explorations have shown the possibility of the existence of some poor quality coal, copper etc. Virtually there has been a conspicuous lack of efforts for the development of the islands. The penal settlement which grew up in Port Blair did not have any considerable influence on the overall development of the islands. Nevertheless with the more intimate knowledge about the islands, the forest exploitation had increased and the land around Port Blair was cleared for agriculture. The little amount of agriculture that was started and fostered by the local-borns in and around Port Blair never expanded considerably and it remained confined to a few areas of South Andaman only. The aborigines were very much widespread and in the beginning they had exercised hostility and arrogance which had in course of time given place to a very friendly and amicable terms with some of the tribal groups i.e. the Onges and the Andamanese. The Jarawas, however, still now maintain their hostility and the attempts for bringing them under amicable terms have so long proved futile.

Nothing more deserves a special note in the islands than the aboriginal population. Because of the insular nature of the islands, the aboriginal population is considered to be one of the purest type though the foreign intrusion has brought about an extremely rapid impoverishment and decay only during the last few decades of contact with these aborigines.

Of the two main groups of aborigines, the Great Andaman Group and the Little Andaman Group, the former being the most widespread and numerous in the Great Andamans has become completely non-existent depicting the example of the decay within an extremely short time, especially since the impact of the foreign people. The fate of the later group is also quite shattering—the Jarawas have experienced both numerical decay and territorial shrinkage and the Onges are the only tribes who live exclusively in the Little Andaman but they have been also facing the signs of decay.

A glance at the map of the Andaman islands and adjacent countries shows the continuity of these islands with the Arakan Yoma of Burma in the north and with the Indonesian islands in the south. The islands of both the Andaman and Nicobar groups are primarily of sedimentary formations of the Eocene period with occasional igneous intrusions. Later formations of coral are also quite widespread. The surface topography of the regions is typically flat-topped being typical of the sandstone regions and the peaks are in most cases formed of igneous intrusions. The islands are comprised of a number of longitudinal ranges running from the north to the south and in between the ranges short streams flow. The heights of the hills are generally 1000' and never exceed 2500'.

The islands experience a high annual temperature and the yearly rainfall is as high as 130 inches in Port Blair and the amount decreases as one moves to the north and the east. The ameliorating influence of the sea is quite appreciable.

With an area of 2508 square miles and the number of islands being as many as 204, only 4 main islands, North Andaman (490.20 sq miles), Middle Andaman (561.00 sq miles), South Andaman (359.51 sq miles) and Little Andaman (289.90 sq miles) have an area of more than 100 sq miles and the rest are sufficiently small in size either to command human settlement or economic activity.

The economy of the tribal people is of the primitive form of hunting and collecting though the precise modes of living vary to some extent depending upon the nature of environment under which they have to live. The knowledge of distribution and of actual number of these aborigines is far from accurate. The Andamanese were the most widespread in all parts of the Great Andamans and in the South Andaman they (Aka bea) had to remain vigilant against the possible attacks and territorial expansion of the Jarawas. The Andamanese, as said earlier, have completely died out. The Jarawas, though have dwindled to a negligible number,

have been pushed into the western jungle infested areas of South Andaman by the foreign settlers and even now attempts of establishing contacts and maintaining good will have proved completely futile. The Onges at present, inhabit the island of Little Andaman, 40 miles from South Andaman and they have come under very negotiable and friendly terms. A detailed account of these aboriginal population has been given in a chapter on the aboriginal population.

Leaving aside the aboriginal population, the islands are being inhabited by the local-borns or the Andaman Indians who have settled in and around the urban centre of Port Blair. The convicts of the penal settlement have settled in these areas by bringing their family members from the mainland or by getting married with the convict women and to-day they are the Andaman Indians. The Andaman Indians drawn from different parts of India and having different languages have become an integrated homogeneous community with Hindi as their spoken language and Urdu as their written script. Such a formation of homogeneous community is verily an example of fusion of different groups under a geographical setting with a common economic and social background. These people shared the major merit of development of the islands. Though agricultural development was attempted, it remained confined to a few areas only. The Andaman Indians being mostly non-agriculturists have shown a reluctance to agricultural practices which is evident from the gradual inflow of these people from agricultural to non-agricultural pursuits, especially in the Government services. The absence of any genuine attempt, to a great extent because of the lack of Government help, has told immensely on the relatively poor development of agriculture. These people are getting fairly educated at Schools in Port Blair and have the collegiate education in the mainland. The educational attainments have, however, been quite upto the satisfaction of meeting the demands of the institutions at Port Blair and in the islands.

Apart from the aboriginal population, a few groups of Bhanus and Mapillas, two criminal tribes of India, and a few Burmans and Karens have settled in the islands. Excepting the Karens who have settled through free enterprise in the north of Middle Andaman, all the groups were brought to the islands to serve the terms of their conviction. However, all these groups have settled quite peacefully in the islands with agriculture as their basis of economy. A limited number of people come to the islands for serving in the administration but they have no interest to settle in the islands and even to-day, the service in the Govt. offices

is made lucrative by way of giving an additional allowance of 33.3% to the basic salary in the islands. The lack of social and cultural developments coupled with the remoteness of these islands still now provoke this apathy. Since the independence, the colonisation of the uprooted East Bengal refugees together with some people from South India is being implemented. An appraisal of the resources of the islands shows the possibility of the development of agriculture with rice as the staple crop, as is common to tropics and on account of the hilly terrain and the vegetative cover, the area of the agricultural development is not at all considerable but quite sufficient for 5000 families. Of all the three main islands, the North, Middle and South Andamans. Middle Andaman offers the maximum potentiality by virtue of the bigger area, presence of a number of river valleys and absence of any other settlement of the later settlers or aborigines. Next to it is the North Andaman and lastly the South Andaman though it seems to be the most lucrative of all the islands. The response of the refugees in the beginning of the implementation of such a programme has been poor which largely owes to the lack of knowledge about the islands, the long distance from the mainland and also due to their being a land of aborigines and penal settlement. However the improved knowledge and the personal acquaintance with the islands have proved a long way in dispelling those awful ideas. A new chapter in the history of the islands has opened for such enterprises which aims at an all-round regional development simultaneously with the agricultural settlement.

For such a small group of islands the cultural diversity is quite conspicuous arising out of the settlement of a heterogeneous group of people coming from different parts of India and also of some from Burma. Though circumstances have played a great role in bringing about a homogeneity, a precise observation shows their distinct characteristics. The aboriginal population has, however, become an object of academic study only and the few of them, the Jarawas, the Onges and the Sentinelese, who are surviving need a deeper intimacy with the civilised people but so far except the Onges such efforts have not proved successful. The penal settlement which ultimately gave way to the development of settlement in South Andaman did not prove very invigorating for the lack of Government help, co-operation and imbalanced sex-ratio. The demographic characteristics have been dealt in details in the chapter on the later settlers and show how much imbalanced it is for the successful growth of population. However the agricultural settlement of the refugees obviously paves the way for a healthy development of the population and

simultaneously with it a successful all-round regional development of the islands.

The resources of the islands having a small areal extent are very limited though the forest and sea products are fairly rich to deserve special mention. The presence of a variety of valuable species of timber in these islands has led to their exploitation since the development of the Penal settlement. The important species of timber found in the Andaman forests are padauk, garjan etc. In the previous decades, the forest exploitation was never associated with a commensurate amount of forest regeneration. Such policies are being followed at present for saving the forest resources from ruthless exploitation without any adequate means of ensuring a perennial supply of timber by systematic regeneration. The recent colonisation scheme has invoked the enquiry for the clearance of the forests. Andaman forests being rich in timber and also being the only major revenue earning source of the islands should by no means be ruthlessly cleared for settlement. Not only it depletes the forest resources but also degenerates the soil—the soil erosion being the immediate victim after such clearance of forests. Considering the primary importance of the forest resources of the islands, it seems to be a plausible agreement that at least 50% of the land should be reserved under forest cover and a further curtailment from this percentage will undoubtedly lead to serious consequences of the soil simultaneously with a great decrease in the resources of the islands.

The sea products range from a wide variety of products from sea shells to sea fisheries. The collection of sea shells is in vogue from a fairly long time and the sea fisheries, mostly being confined to the coastal areas, is conducted by the fishermen and the tribal people for their own consumption. There is a good deal of possibility for furthering the development of marine fisheries on a commercial scale but the lack of enterprise and capital investment has not given rise to any appreciable development. The only two enterprises of the fisheries are those of Trochus and Turbo shells by the Japanese during 1930-36 and another enterprise by a business concern in 1947. Even the present catch from the coastal areas amount to only 300 lbs., a considerable lag from the demand within the islands.

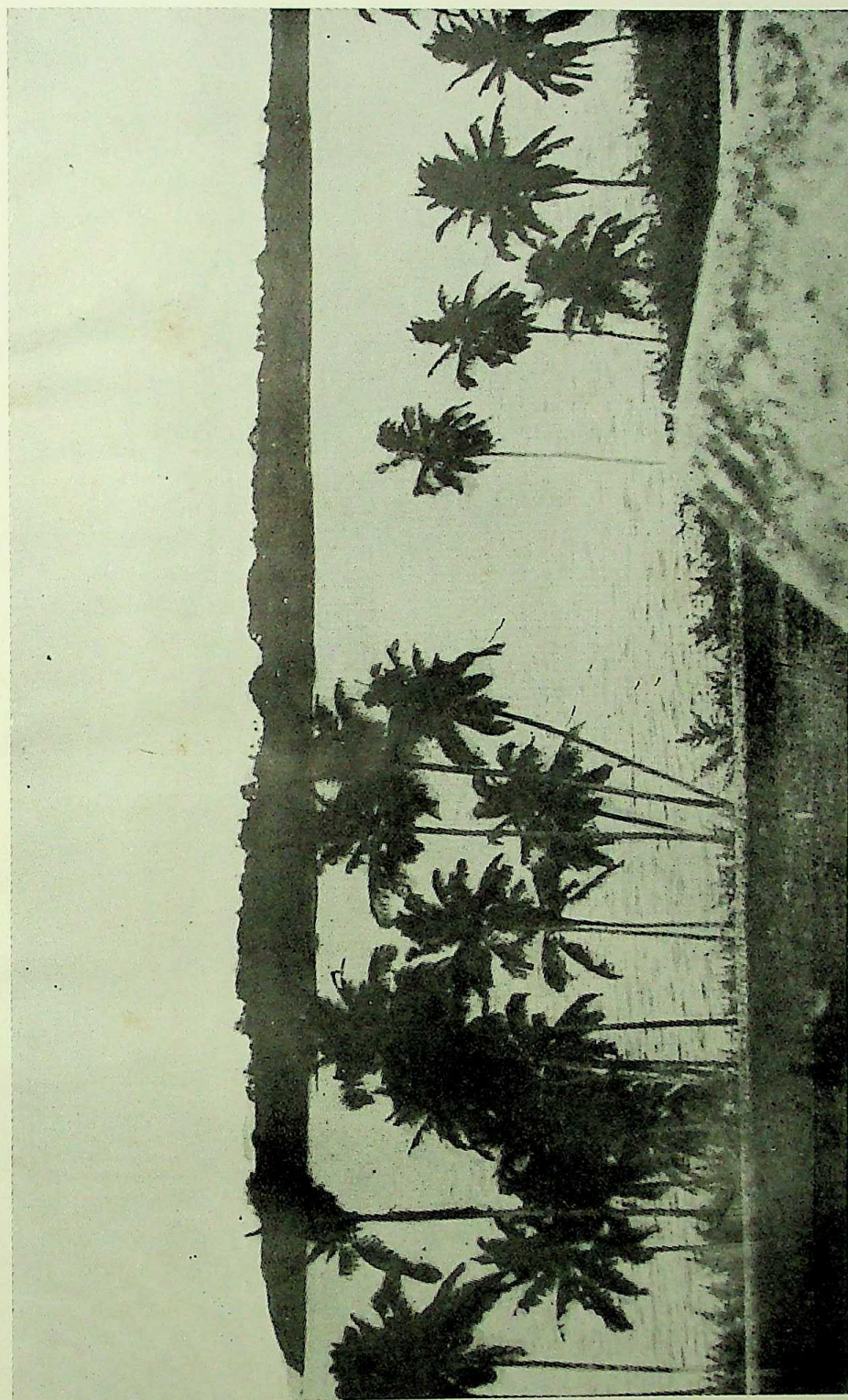
The means of earning livelihood in the islands were hunting and collecting by the aboriginal population who have not even to-day learnt the techniques of domesticating plants and also animals except the Onges who have domesticated the dogs very recently. The penal settlement and the subsequent expansion of the administrative seat at Port Blair

gave way to the development of agriculture over an extremely limited area in South Andaman — paddy cultivation and coconut plantations have succeeded quite well. The plantations of rubber, tea and coffee also developed in the South Andaman over very small areas but ultimately did not prove very successful, partially due to the lack of adequate care. Simultaneously with the settlement of the refugees, new areas are being brought under plough which had never been interfered with human hands. The growth of agriculture based on rice cultivation together with vegetable gardening, development of orchards, coconut cultivation will bring about self-sufficiency of the islands and make the people self-supporting.

Industrial development of any big scale cannot be foreseen except the lumbering industry because of the lack of resources, power and also of any appreciable home market. Besides lumbering, the fishing industry, if properly co-ordinated with the mainland, can be developed to a great extent. A number of cottage industries based on coconuts, sea and forest products have developed, of which the coirmaking has developed most.

The characteristics, common to the tropical islands, are to a large degree manifested in these islands. The physical environment suffers from a number of limitations. Hot and humid climate is ameliorated by the influence of the sea in all parts as none of them are more than 10 miles away from the sea. The problems of soil are quite tremendous and such signs are only discernible to a small extent in the islands which might share greater proportions in the future if adequate measures of careful cultivation are not undertaken. The natural vegetation should be carefully preserved and regenerated after the felling of the trees not only for the conservation of the vegetation but also for saving the soil from the serious consequences of erosion. The cultural environment is a mosaic of variety because of the different types of people who have been living in these islands, however negligible their number might be. The imbalance of regional growth, being exclusively confined to the South Andaman, is being removed with the growth of settlement in the other parts of the islands and the indications of the shift in gravity of the economic interests is synchronising with the progress of settlement in the North and Middle Andamans. Mayabunder is handling a greater share in the movement of commodities and passengers. Such changes are undoubtedly very much welcome as the lowering of the disparities in the regional economy and growth speak of an all-round regional development.

The Nicobar group of islands being separated off from the Andaman Islands by the Ten Degree Channel, though constitute a part of the continuation of the island in the north, the geographical entity of these islands are conspicuously different from that of the others. The Nicobar Islands have an area of 635 sq. miles and have 19 islands, out of which 12 islands are inhabited. The human habitats are exceedingly interesting and these people are distinctly different from the aborigines of the Andamans not only in their physical characteristics but also in their cultural attributes. Material life is much more improved and they have been all the time experiencing a healthy growth in comparison to the rapid decay of the Andaman aborigines. Culturally the affinity seems to be closer with the Indonesian islands. Shom Pens, the highlanders of the Great Nicobar, live in perfect isolation and have an extremely primitive economy. The staple crop is coconut and a number of fruit trees and yam are also grown. Some of the islands have become extremely overcrowded and need immediate dispersal to some of the less crowded islands. A detailed geographical treatment would require much more words to say about these thriving people and their contact with the foreigners than those of the Andamans. However it remains incomplete if the study of the Nicobar Islands is not incorporated in that of the Andaman islands. Therefore, in spite of the distinct geographical contrast with the Andamans, a short geographical summary has been given at the end of the book.



A Panoramic view of an island of the Andamans.

PART I
PHYSICAL BACKGROUND

PART I
PHYSICAL BACKGROUND

CHAPTER I

POSITION AND EXTENT

The Andaman Islands, comprised of a large number of islands amounting to as much as 204, cover an area of 2508 square miles. These groups of islands with the other ones in the south, known as the Nicobar islands, are the only Indian islands in the southeastern ocean frontier. The alignment of the Andaman and Nicobar Islands is from the north to the south and these groups of islands have geological affinity with the adjacent countries i.e. Burma and Indonesia. These tropical islands possess some of the salient characteristics of the tropics given to the very primitive type of economy.

The Andamans lie between $10^{\circ}30'$ and $13^{\circ}30'$ north latitudes; and between $92^{\circ}15'$ and $95^{\circ}15'$ east longitudes. The extreme length and width are 219 and 32 miles respectively. At the extreme north is the Landfall island followed by the three main islands of the Andamans—the North Andaman, the Middle Andaman and the South Andaman, all of them being separated off from each other by shallow seas. Further South at a distance of 40 miles from the South Andaman lies the Little Andaman. Besides these there are innumerable small islands—Ritchie's Archipelago and the Sentinel Islands may be worthy of mention.

There is an absence of unanimous agreement regarding the number of the islands and their respective areas. No one has, however, been able to locate all the islands on the map but the estimate made by the Forest Department is considered as the most authoritative.

Area of the islands in square miles.

<i>Island</i>	<i>Area</i>
North Andaman	490.20
Middle Andaman	561.00
South Andaman	359.51
Landfall and 7 other islands in the North	
Andaman Group	27.92
Interview and 4 other islands in the Middle	
Andaman Group	59.00
Baratang and 4 other islands in the Baratang	
Group	11.34

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<i>Island</i>	<i>Area</i>
Havelock and 6 other islands in the Ritchie's Archipelago Group	94.20
Rutland and 3 other islands in the South Andaman group of islands	73.86
Tarmughli and 4 other islands in the Labyrinth island	12.20
Little Andaman	289.90
166 other islands	430.97

But regarding the above statistics, Sri H. R. Shivdasani, I.C.S. writes as follows:—

'Obviously the area of 430.97 square miles for the other small islands is incorrect and far too much. It gives an average area of 2 square miles per island in which case they deserve individual mention when other islands of less than 1 square mile in area have come to special notice. Forest officers themselves admit that these 166 small islands cannot have a total area of 1430.97 square miles. We may assume that the information of the Punjab Delegation¹ is correct. Even so it would seem that if out of the other islands (735 square miles) we exclude Baratang, 90 square miles, and Little Andaman 290 square miles, there will be 200 small islands with a total area of 335 square miles'.²

The Andamans lie 590 miles from the Hooghly mouth, 120 miles from Cape Negrais of Burma and 340 miles from the northern extremity of Sumatra. In spite of the very close situation of the islands to the crowded countries like the mainland of India, Burma and the Indonesian countries, the contact has been quite feeble.

1 The Punjab Delegation went to the Andamans to explore the possibility of colonisation in the islands.

2 Shivdasani was sent to the Andamans with a party by the Government of India to study the aspect of colonisation in the islands in the year 1949.

CHAPTER II

HISTORICAL BACKGROUND

The insular position of the islands has made the Andaman groups of islands extremely obscure and even to-day the obscurity of the islands has not been totally dispelled. The islands being cut off from the rest of the world have remained as the abode of the negritos until the very late arrival of the people from the civilised countries at the end of the 18th century. Though there were occasional incidents of plunder and raids by the pirates in the islands, no account of the chronological sequence of the facts and incidents can be built up except some erratic speculations gathered from the books written by the early traders. The isolation and the obscurity of the islands were removed to a considerable degree with the arrival of the British administrators and the consequent development of the penal colony. It is only after the formation of the penal colony that the historical account of the islands is made available. The history of the islands is extremely fascinating which depicts how the melting pot gave way to different people. It is only through the proper understanding of the historical background that the land and people of the islands hold up their true character, though in a treatise like this the study of history is beyond the direct compass. From the study of the history of the islands it can be concluded that geography has largely, if not wholly, determined the history of the islands. Geography, of course, is a study of different spaces (regions) but it is not a static one because of the great interaction of man with his land which gradually moulds it into different shapes and so it has got its reflection in history, a study of the different times.

The historical phases of the islands can be roughly grouped into four main periods which show some distinct tendencies separated off from each other.

1. Upto 1788—The period of seclusion and piratical disturbances.
2. 1788-1941—The British regime—a period of foreign intrusion and settlement.
3. 1942-1945—The Japanese Regime.
4. Post Independence Period—Attempt of all-round regional development and welfare of the islands and the settlement of the refugees mainly from East Pakistan.

(1) *The Period of Seclusion and Piratical Disturbances*

In this period of seclusion, people had some knowledge of these islands from the travellers, traders and sea-pirates owing to the central position of the islands on the trade routes of India, Burma and the Far East. The islands were inhabited exclusively by the aborigines. Mention of these islands dates back to the 2nd Century A. D. in the writings of Claude Ptolemy. The map referred to, in his writings, indicates the Islands of Buzacata to be in the place of the Andaman Islands and it is said that this island produces quantities of shells and the inhabitants go naked and are called Agmatae. It is believed that the Island of Buzacata means to refer to the Andaman Islands and such a peculiar name (Buzacata) has been achieved through the originality of the cartographer.

Later mentions of these islands are found in the collection of early Arab notes of the 9th Century on India and China which were translated by Eus. Renaudat and the people of the Andamans have been called Angamanians. Further mention of the islands is made by two Mohammedan travellers (Pemberton's General Collection of voyages and travels), Chinese Buddhist Monk I'Tsing (672 A.D.), Marco Polo (1286 A.D.), Friar Odoric (1322 A.D.), Nicolo Conti (1430) etc. From most of their writings it was evident that the islands were inhabited by very ugly brutes who would eat up any man, whom they could lay hands on. Nevertheless, this was a land of riches and was named the "Island of Gold." An idea of the knowledge of these islands in the early days can be had from the notes of Marco Polo, a portion of which is quoted below.

"Angamanian is a very long island. The people are without a king and are idolaters and no better than wild beasts. All the men of this island of Angamanian have heads like dogs, and teeth and eye likewise; in fact, in the face they are just like big mastiff dogs. They have a quantity of species; but they are a most cruel generation, and eat everybody that they can catch, if not of their own race. They live on flesh and rice and milk and have fruits different from any of ours."

These types of early notes by different travellers are largely written from second hand knowledge and tales current in the neighbouring countries of the Andamans viz. Malaya, Siam, etc. Mr. Portman¹ opines

¹ Portman, M. V.—A history of our relations with the Andamanese.

that, "it should be remembered that it was to the interest of the pirates who made the Andamans a headquarters of their raids and also enslaved the aborigines, to exaggerate the real dangers they encountered and spread such tales regarding the Andamans as would keep them away." The islands have been ravaged by the Malay sea pirates from very early times. They used to come to collect shells and to carry on the slave-trade. These sea-pirates, through their exaggerated propaganda, made the islands a monopoly ground of their own and, in consequence, people used to know it as a land of horror. The slaves brought by the pirates used to find their way in the courts of Siam, Cambodia and Indo-China for many centuries, thus bringing about the deepest distrust and hostility on the part of the aborigines to all the visitors to the islands.

The name '*Andamans*' of the islands is a corrupt form of the name '*Hanuman*' or 'Monkey peoples', the aboriginal antagonists of the Aryan immigrants in India. In the earliest Hindu mythology, the *Ramayana*, these islands were believed to be a land of the *Hanumans*. Malaysians used to refer to them as '*Handuman*' which is even a corrupt form of *Hanuman* and from Malay the knowledge about the Andamans first spread into the different parts of the world. Hence the '*Handuman*' has further evolved into '*Andaman*'.

(2) *The British Regime and the Period of Foreign Intrusion and Settlements Since 1788.*

Factual records of the history of the Andamans can only be had since 1877 with the steps taken by the British Government of India to found a penal colony in the islands. The disturbing activities of the Malay pirates and the frequent massacres of the ship-wrecked crews around the Andaman Sea necessitated the Government of India to form a penal colony in the islands. For the materialisation of such a proposal, Lord Cornwallis sent Lt. Blair and Lt. Colebrook to investigate into the possibilities of such a colonisation in the islands in the year 1788. In accordance with their investigations, the first settlement was established on Chatham Island* at Port Cornwallis (now Port Blair) consisting of a free colony. It was found that the North East harbour (now Port Cornwallis) was a better place for settlement because of its fine harbour and nearness to Calcutta. So, in 1792, the settlement was transferred

* Chatham Islands is the port of the Port Blair town and is a very small island.

to the spot but it had to be shifted again to Port Blair because of the unhealthy climate and in consequence high mortality rates in that region.

But this settlement prospered little and for the next 60 years (uptil the second settlement) we have got very scanty records of the islands. The few important events are that in 1824 the British fleet were appointed at Port Cornwallis before the First Burmese War in 1825. J. E. Alexander landed, in a very interesting way in the Little Andaman, south of the South Andaman.

In 1837 Dr. Helfer, a Russian Geologist, was murdered by the aborigines while he was making expeditions into the islands in search of gold. In 1744 happened the queerly coincidental wrecks of the ships 'Runnymede' and 'Briton' bound for Calcutta with troops from Sydney and Gravesend respectively and there were various attacks on the troops by the Andamanese.

This period of great mishaps, shipwrecks and other disturbances made the government anxious. Fortunately for the British Government, this period synchronised with the Sepoy Mutiny in North India in 1857. Again a comprehensive report was submitted for making the islands a penal colony and in March 1858, the Andamans entered into second phase of its history as a penal settlement with the first lot of prisoners, 200 in number, and the mutineers of the Indian army who for the first time attempted to overthrow the British rule in India. They were accompanied by Dr. J. P. Walker. But the number increased to 773 within 3 months but 292 of them or 37 p.c. had escaped, died or were hanged.

Very strict measures were taken by Dr. Walker to deter these convicts from escape. But the administration of Dr. Walker was further weakened by frequent attacks of the Andamanese and this culminated in the Battle of Aberdeen on the 14th May, 1859. Dudh Nath Tewari, an escaped convict, who lived long with these aborigines, warned the settlement of the attack to be made in the Aberdeen, the heart of Port Blair, and as such proper steps were taken by the settlement to fight against the Andamanese. The escaped convict was released for his timely service.

Colonel J. C. Haughton (Oct., 1859) took the charge after Dr. Walker and he was a very loving personality amongst the convicts. He adopted a very humane method of treatment of convicts and established friendly relations with the Andamanese. In 1861 the administration of the Andamans was transferred from the control of the Government of India to the Chief Commissioner of Burma.

Colonel Taylor (1862) also adopted humane methods. 149 acres of land had been cleared for cultivation and there were some 3000 convicts

in the settlement by 1864. In this period Lord Napier of Magdala visited the islands and suggested certain reforms. The Government of India sanctioned a grant for the formation of the "Andamanese Home" which aimed at improving the relations of the civilised people with the aborigines.

In 1863 General Man took the charge when the number of convicts increased to 8873 and 3000 acres of land were cleared, 876 acres of land were brought under plough and as a result health conditions improved and death-rates fell appreciably from 10.16% to 1.2%.

General Steward (1871) followed General Man and devoted himself to the agricultural developments of these islands and while on a visit to the Andamans he was murdered by a convict at Hope Town on the 8th February, 1872. In this year the administration was first raised to the rank of Chief Commissionership and the Andaman Regulations of 1874 were drafted, placing the settlement judicially under the Government of India, instead of under the High Court of Calcutta, and making provisions for the release of the life time convicts after 20-25 years of penal servitude if they showed good conduct.

General Steward was followed by Colonel T. Cadeil, who was here for 13 years and attempted the great economic development of the settlement. The Forest Department was opened and the foundation of the Cellular Jail was laid down, though it was completed in the year 1905 and the recruitment of the labourers was made from the convicts only. The Cellular Jail claims to be the biggest masonry building in the Andamans, situated on the sea-coast.

Sir Richard Temple (1894-1903) also did many constructive works such as the considerable enlargement of the Phoenix Bay dockyard and workshops, and the initial arrangements for the reclamation of South Point—Aberdeen Swamps were completed in 1918.

Later came Colonel Douglas (1913-20) and the first suggestion for abolishing the penal colony was forwarded by him. A forest colony was started in North Andaman Division which had to be closed down due to the general trade depression and the most remarkable achievement was the plantation of cocoanuts over several thousands of acres which afterwards formed a source of large revenue.

Colonel Beadon's tenure (1920-23) marked a change in the administrative policy. Only 1400 Mapilla rebels and some Punjabis were received as convicts and the general convict strength fell from 11,532 to 8823. Unmarried women convicts and also some categories of male

convicts were sent back to India. The convicts were provided with many facilities and they were also treated leniently. The cocoanut plantations developed by Colonel Douglas were made over to some private enterprises. Beadon contemplated various reforms and changes in the administrative policy of the Government, but failed to translate them into action due to the shortage of funds. The local-born association was started under the Presidentship of a Government Gazetted Officer for their welfare.

Colonel Ferrar (1923-31) possibly brought about the greatest changes in the island and with the closing of the penal settlement, schemes for colonisation and developments were necessary. The settlement in the Andamans had grown up in and around Port Blair in the South Andamans and everywhere the ephemeral huts of former times were giving way to well constructed two storied houses of sawn timber and iron roof, with stair cases, glazed windows and other amenities. The old period of 10 years on probation as a labouring convict was abolished and after a few months' stay in the Cellular jail all the convicts found themselves placed on a wage basis and freed from the necessity of wearing convict dresses. During this time the willing convicts were allowed to go back to the mainland to bring their wives and families to the Andamans for permanent settlement. Many of the convicts, of course, returned back to the islands with frustrated mind as they were not recognised by their societies and families in the mainland to which they originally belonged.¹ All these changes in the administrative policy had their impact on the rural and urban population. In spite of the above cases, there was a rapid increase in the number of women and children in the Andamans and the social structure gained greater stability as regards the sex ratio, and this was probably a stepping stone to the successful approach towards colonisation.

A new deep-water jetty was built up at Chatham and was connected with the main island by a wooden bridge. Malarial swamps around the harbour were filled up by dredgers. A match factory was also built up at a cost of 3½ lakhs of rupees. Hence the period of Colonel Ferrar is a period of achievement when probably new life was infused into the people of the Andamans and had its effect on the all-round development of the South Andamans.

¹ Bonington, M.C.C.—Census Report, 1931.

(3) *The Japanese Regime.*

Under such circumstances of smooth development in the Andamans, the World War II darkened the horizon and no other part of India was so badly affected by the war as were the Andamans. The Japanese Army landed here on the 21st March, 1942 and had these islands under their occupation till 1945. This period was really a reign of terror and tales relating to the extent of their terrorism can be heard from the people with first-hand knowledge. In the beginning the relations of the Japanese with the local people were quite amiable. But a few instances of treachery committed by the people to contact the British Government in their attempt to overthrow the Japanese rule changed their relation to a bitter one. Hundreds of local borns were killed on the least suspicious by the Japanese Government. Naval blockade prevented supplies from outside and the Japanese were the pioneers in making the Andamans self-sufficient. From high Japanese officials to menials, all people were compelled to cultivate lands in order to achieve self-sufficiency at home. They cultivated all the available lands including hill slopes where they grew sweet potatoes and tapioca. The Japanese are also believed to have bombed over the Jarawa areas and surely they killed some. On the 8th October, 1945, the S. E. A. C. took the surrender of the Japanese garrison at Port Blair and immediate steps were taken for the rehabilitation of the surviving population who were famished and ill-clad. The civil administration was re-established on the 7th February, 1946.

Although the Japanese regime was a reign of terror, they at least showed the proper channel to develop the islands. They attained self-sufficiency in the Andamans, constructed 22 miles of road and tried for proper defence of the islands and developed industries based on local raw-materials. Whatever criticism may follow regarding such steps taken by the Japanese, it is to be believed that such isolated islands must follow this channel for their economic development.

(4) *Post-Independence Period.*

Since the 15th August, 1947 the Andaman and Nicobar Islands have shared independence with India. They now constitute the only 'D' class 'State' of the Republic of India, ruled by a Chief Commissioner directly nominated by the Indian President. Because of the meagreness of population adult franchise is not in vogue here and as such there is no representative from the Andamans in the Indian Parliament, but there is only one representative to the Parliament from the whole of the Andamans and the Nicobars nominated by the President of India. In the Andamans a local advisory

council is nominated by the President of India on the recommendation of the Chief Commissioner which has been working in the islands for a few years.

The Government of the Andamans is attempting to colonise the islands successfully in collaboration with the Government of India, and in accordance with this principle the East Bengal refugees are being rehabilitated in the islands. An all-round economic development is aimed at and its supplementation depends upon the future Five Year Plans.

CHAPTER III

PHYSICAL SET-UP

The Andaman & Nicobar Islands form a part of the continuous ridge which runs from the Cape Negrais of Burma through the Preparis and Coco Islands to the Andamans and continues further to the Nicobars and Sumatra. The whole ridge has a geological affinity with the Arakan Yoma of Burma and Sumatra and Java. The ridge is primarily of Eocene formation and forms a part of the great Alpine-Himalayan system. Prof. Gregory holds the view that "the main line continues eastward through the Himalaya until the resistance of the Chinese plateau has traced it southward and part of it now lies beneath the Bay of Bengal, it reappears in Sumatra and continues through Java and across the Malaya Archipelago."¹ But some modifications of Gregory's view have been achieved and presently it is believed that this ridge is a loop of the main Himalayan axis comparable to the Persian loop in western Asia and Apennine loop in Europe.² The ridge is not continuous but is interrupted in many places, of which the 3 main channels are worth considering. The depth of the channels increases from north to south.

(1) Preparis channel in between north and south Preparis islands has a depth of over 500 fathoms.

(2) The Degree Channel, between the Andamans and the Nicobars, is approximately 400 fathoms deep.

(3) Great Channel lying between Great Nicobar Island and Sumatra is about 750 to 800 fathoms deep.

The peaks of the mountains now form the islands and in some places the coastline slopes very steeply to the ocean.

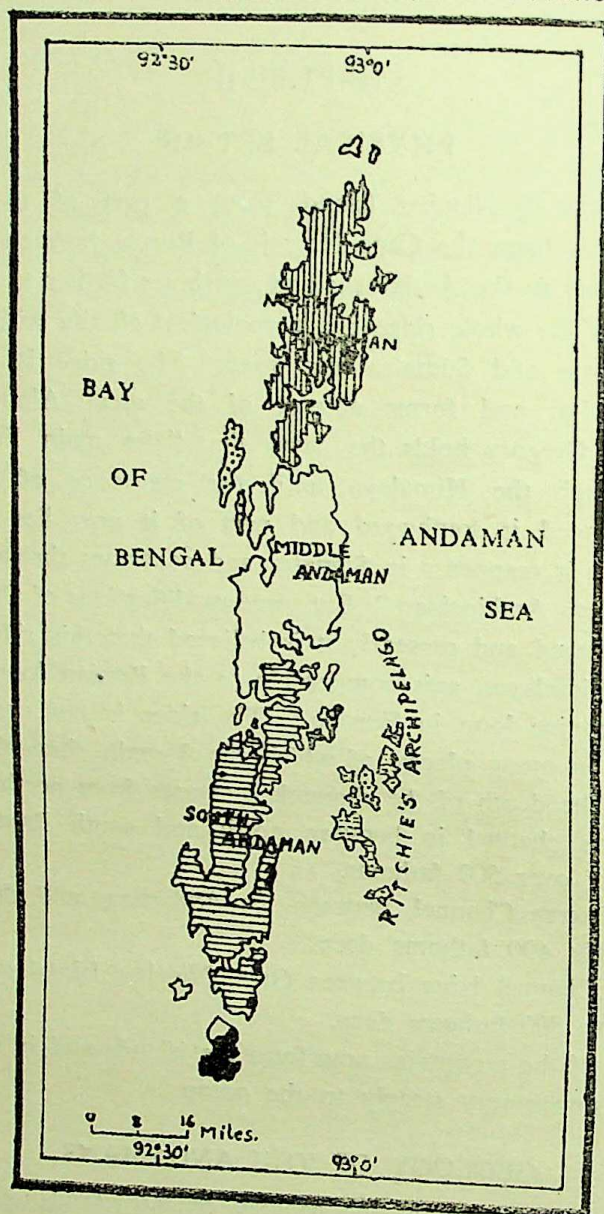
GEOLOGY OF THE ANDAMANS

The present knowledge of the geology of the islands is largely the outcome of the investigations done by R. D. Oldham (1885), Kurz (1868), Gee, and G. H. Tipper. Even at present a thorough geological knowledge of the islands has not been achieved and this has been due to a number






1. Gregory, J. W.—The Structure of Asia, London, Methuen.

2. Swell, R. B. (1925)—Geography of the Andaman Basin, Geographic and Oceanographic Researches in Indian waters, Mem. Asiatic Soc Bengal IX. No. 1.

MAP OF THE GEOLOGY OF THE ANDAMANS



INDEX

	UNSURVEYED		SANDSTONE OF SOUTH ANDAMANS.
	MIOCENE CLAYS OF RITCHIE'S ARCHIPELAGO.		EOCENE CONGLOMERATES OF N. & M. ANDAMANS.
	MIOCENE BURDIGALIAN FORAMINIFERAL LIMESTONES.		CRETACEOUS SERPENTINE SERIES.

of reasons. Firstly, a thorough survey of the islands is very difficult because of the dense forests and hostile aborigines. Secondly, the Government also cared little to take pains for initiating such a work. Regarding the inconveniences of geologising Tipper writes "the thickness of the jungles may be judged from the fact that our rate of progress varied from half a mile to a mile an hour. The dense jungle with a lack of exposures made geologising very difficult."

Rink first postulated that the Andaman-Nicobar ridge was elevated to its present height from ocean bottom. He describes the chain of islands as consisting "partly of those stratified deposits which occupied the level bottom of the sea before their appearance, and partly of plutonic rocks which pierced through the former and came to the surface through upheaval.

To the two above-mentioned formations has to be added a third, which is the result of the chemical and mechanical destruction of the plutonic masses: it is local and consists of clays and pebbles derived from the underlying strata."

On the whole, the mountain ranges of the Andamans are of sandstones of Eocene Age with intensive rocks of serpentine in places. Large parts of the North Andaman have been grouped under the Archipelago Series by Oldham. Tipper considers the conglomerates of North and Middle Andamans as a facies of the Eocene deposit. Between the mountain ranges which run north to south, some undulating ground is found which often consists of impermeable blue clay beds, indurated shales and conglomerates containing pebbles of quartz and jasper. Coral reefs and the raised beaches form the recent and sub-recent formation of the Andamans. The formation of the Andaman-Nicobar ridge has been assigned to late Cretaceous age.

Oldham has distinguished two sedimentary formations in the Andamans besides serpentine series. He named them as

- (1) Port Blair Series, &
- (2) Archipelago Series²

The Port Blair series is so named because it is dominant in and around Port Blair, i.e., in the South Andaman. The rock types are gray sandstones with interbedded slaty shales, frequently consisting nests

1. Tipper, G. H.—The geology of the Andaman Islands with reference to the Nicobars. Mem. Geol. Sur. Ind., Vol 35, Part 4.

2. Oldham, R. D.—Notes on the Geology of the Andaman Islands, Rec. Geol. Sur. of Ind., Vol. 18, Part 3, 1885.

of coaly matter and occasionally beds of conglomerate and pale gray limestone as subsidiary members.

The Archipelago series, as the name implies, is dominant in the islands of the Archipelago group. It consists of soft limestones formed of coral and shell—and, soft calcareous sandstones and soft white clays with occasionally a band of conglomerates.

Later on G. H. Tipper further clarified the geology of the Andamans and as analysed by Tipper, the 'Port Blair Series' and 'Archipelago Series' of Oldham correspond to Eocene (Lower Lutetian) and Miocene formations respectively. According to Tipper, the greatest authority of the geology of the Andamans, the following formations have been distinguished in the Andamans:—

Recent and sub-recent	... Raised beaches and coral reef etc.
Miocene	... Clays of Ritchie's Archipelago.
Miocene (Burdigalian)	... Foraminiferal limestones, shell marks of Paget Island.
Eocene (Lower Lutetian)	... Conglomerates of the North and Middle Islands. Sandstones of the South Islands.
Cretaceous	... Serpentine Series.
Pre-tertiary	... In part lower Cretaceous, scattered expanses of quartzites, jaspers and porcellanic limestones.

Of all formations, the Eocene rocks are most widely prevalent. They occupy the 3 main islands i.e., North, Middle and South Andamans and have got two facies of the same deposit. In the North and part of the Middle Andamans the prevailing rock is conglomerate while in the South Andaman it is sandstone.

The Sandstone Area of the South.

The sandstones of the South are even-grained blue grey micaceous sandstones but are sometimes non-micaceous and calcareous intercalated slabs are frequent. Conglomerates also occur in white quartz pebbles of sandy matrix. The rocks have experienced honey-comb weathering because of the irregular distribution of the cementing materials.

It should be remembered that the geological survey of the Middle Andaman has not been done properly.

The Conglomerates of the North.

The Conglomerates, as said, occupy almost the whole area of the North Island. The Conglomerates vary considerably in character from a very coarse form with large rounded pebbles to a sandstone. The pebbles are usually rounded and not angular.

Miocene (Burdigalian) Deposit.

Foraminiferal limestones occupy large areas of the west coast of the Middle and North Andamans including Interview, Paget, Whitecliff and Thorn hills islands. These beds rest directly but unconformably on the Eocene conglomerates. The rocks vary in degree in different places. The rocks of Interview island are compact limestones with a few quartz grains, that of Paget island are soft foraminiferal sands. On Interview island a large number of long pits, narrow and of considerable depth are found. According to Tipper, they are "due to the falling in of the roofs of the underground streams." The limestone is in places very conspicuous and this feature has boldly made its appearance because of the hardness of the limestone and its action with the rain water.

Other Miocene Rocks.

These rocks have been classified by Oldham as the 'Archipelago Series.' The strata composing these islands consist of soft non-calcareous clays. The conglomerates of the North and Middle Islands, as has already been said, were classified under this group. But later investigations by Tipper and others proved the distinction of the two series. Almost the whole of the Ritchie's Archipelago is composed of this series. There is a good deal of controversy regarding the origin of this clay formation. Ehrenburg (1850) holds the view that this series has been elevated from a considerable depth below the sea level and this is proved by the absence of CaCO_3 . As Boggild (1916) has shown that the absence of CaCO_3 is a characteristic feature of this deep-sea deposit, these non-calcareous clays are held to be of deep-sea deposit and believed by Ehrenburg to be identical with the deposits found in Barbadoes. But the absence of CaCO_3 in the deposits near the mouths of the rivers have also been shown by Swell (1925). But what is now accepted is the view held by Tipper and Oldham. They believe that the clay deposits in the Andamans and those in the Nicobars are geologically identical and moreover, have arrived at the conclusion that the deposit has been formed by the breaking down of the older ser-

pentine rocks and the deposition took place in comparatively shallow water in an estuarine or brackish water sea.

Serpentine Series.

These are igneous rocks covering large areas in the Andamans. They occur at Saddle peak and Saddle hill, Rutland and Cinque islands and many other places. The chief rock is a darkgreen serpentine with veins of chrysolite. The serpentine is basic in character and is derived chiefly from olivine and in part from horn-blende. Somebody believes that the serpentines intruded into the Tertiary sediments but evidences of contact metamorphism could be detected in such a case. In the basic rocks great alteration due to contact metamorphism does not take place, but at least some traces of it should be found around the great mass of Saddle peak had it intruded into the adjacent tertiary sediments. But such is not the case. This serpentine series synchronised with the great intrusions of serpentines, peridotite gabbros and clorite in Baluchistan and elsewhere in India which are of upper Cretaceous age. The Eocene conglomerates of the North Andaman are formed of the fragments and pebbles of the serpentines.

The Pre-tertiary Sedimentary Rocks.

Red and yellow jaspers, quartzites and pink and white porcellanic limestones are the pre-tertiary sedimentary rocks which occur in isolated patches. The exact age of the rocks has not yet been determined. Weathered jasper pebbles are very common in the Eocene conglomerates of the North Andaman. Similar occurrences of jaspers and quartzites are found in Manipur and Arakan Yoma.

The Recent and Sub-Recent Formations.

The recent formations of the Andamans are the raised beaches and coral reefs. The growth of the raised beaches and coral reefs has been analysed in the light of the upheaval of the Andaman-Nicobar ridge which is believed to be still rising. This process of upheaval is slowly continuing and the same seems to be the case further to be north in the Arakan district of Burma.

The South Sentinel Island is composed of corals raised to a few feet. The N. Sentinel Island is also said to be of raised coral. Swell also detected one or two localities of reef coral that now form part of the shore and are raised considerably above the high water level. Since these beds must have originated at some depth below sea level it seems clear that elevation has taken place quite recently.

Hence the formation of the coral reefs and raised beaches can be accounted for only if we believe in the recent upheaval of the Andaman-Nicobar ridge. Let us see the evidences that are in favour of this upheaval and those against it. Swell and Tipper believe that the Andaman-Nicobar ridge has experienced an apparent elevation of land which is only possible through the eustatic change of water-level. They have put forward a number of arguments that are as follows:

(1) The formation of coral reefs is possible only if there be an apparent or true elevation of the land.

(2) Throughout the tropical belt there are evidences of an apparent elevation of land in comparatively recent times.

(3) At the South West corner of Rutland Island in the Andaman Group, there is a raised pebble beach, situated 5'-6" above the top-level.

(4) At the southwest end of the westernmost of the Twin Islands, off the west side of the Rutland Island, is a raised beach of shingle-conglomerates, about 6' ft. above high water-mark. This apparent upheaval of the land i.e. fall of the sea-level is believed to have been caused by the climatic fluctuations in the Quaternary period causing glacial and interglacial periods which resulted in a fall and rise of the water-level respectively.

But Kurz (1868) does not believe in the recent upheaval of the Andamans, but he holds the opposite view. The advocacy of Kurz in favour of the sinking of the Andamans is also due to a number of reasons.

Kurz had his conclusion from the botanical aspect of the coastal region. Kurz says, "some of the stumps of the trees (along the shore) proved to belong to such species as never grew in the mangrove swamps, and in any locality such as that in which they are now standing. They appeared to me to belong to *Pongamia*, *Erythrina*, *Thesperia* and even to *Manusops Indica*, accompanied by strongly buttressed trunks. Also trunks of *Bruguiera-gymnarhiza* are frequent and of a larger size than those which grow close to the shores but apparently agreeing with those which are everywhere found further up the creeks. All these (except the last mentioned) are trees which never occur in the mangrove swamps, but in the sandy soil just behind them or else bordering the sea where the shores are very steep and not adapted to the formation of mangrove swamps." This evidently leads one to believe that the

1. Kurz. S—On the vegetation of the Andaman Islands, Calcutta.

Andamans are sinking so that the trees which are found in the sandy soils behind the mangrove swamps are seen to be amidst them.

The sinking state of the Andamans has been further shown by quoting the reports of the Andaman Committee (1858)². It is stated that the sea had encroached upon some 40' or 50' feet since the first settlement at Chatham Island in Port Cornwallis so that the store house that stood up there has been destroyed by the sea since the abandonment of the place since 1796. Again the Hamfray's strait changed a good deal in a very short margin of time. The easiness with which Helfer³ in 1858 sailed through the strait became unnavigable later on except for small boats, as pointed out by the Andaman Committee. These facts not only prove the sinking state of the islands but also the rapidity with which the sinking is taking place. But the view has been strongly disputed by Tipper and Swell. Swell believes that whatever evidence that is found in favour of sinking is completely due to local change of level and Tipper argues that the coastal regions have slipped downwards to the sea giving rise to the evidences of sinking. He says that the structure of the Andamans may allow such slips into the sea.

Thus the enigma of the problem remains unsolved. Even in recent years the Ross Island off the Port Blair coast has been found to sink down into the sea. We have to scrutinize that this sinking which is evidenced in many parts of the Andamans is whether due to a new phase of sinking after the cessation of the upheaval of the islands which created the coral reefs, raised beaches etc. or due to the slip of the coastal region into the sea.

The direct connection of the Andaman and Nicobar islands with the mainland is still a controversial matter. But it is held by Mr. Kurz that the Andamans were connected with the mainlands which he concluded largely from his observations of the botanical aspect of the islands. In describing the flora of the Andamans he remarks "one may presume that a great number of species which originally grew in countries now submerged between these islands, Burmah and Hindoostan, have been repelled by the advancing sea and vegetation has thus become comparatively richer in generic types as the area grew smaller." Swell argues if at all any land connection of the islands with the mainland would have occurred, it would have surely been broken before the evolution of

2. Bonington, M.C.C.—The Andaman and Nicobar Islands, Census of India, 1931.

3. Helfer, a Russian geologist, while prospecting the islands in search of gold was killed by the aborigines.

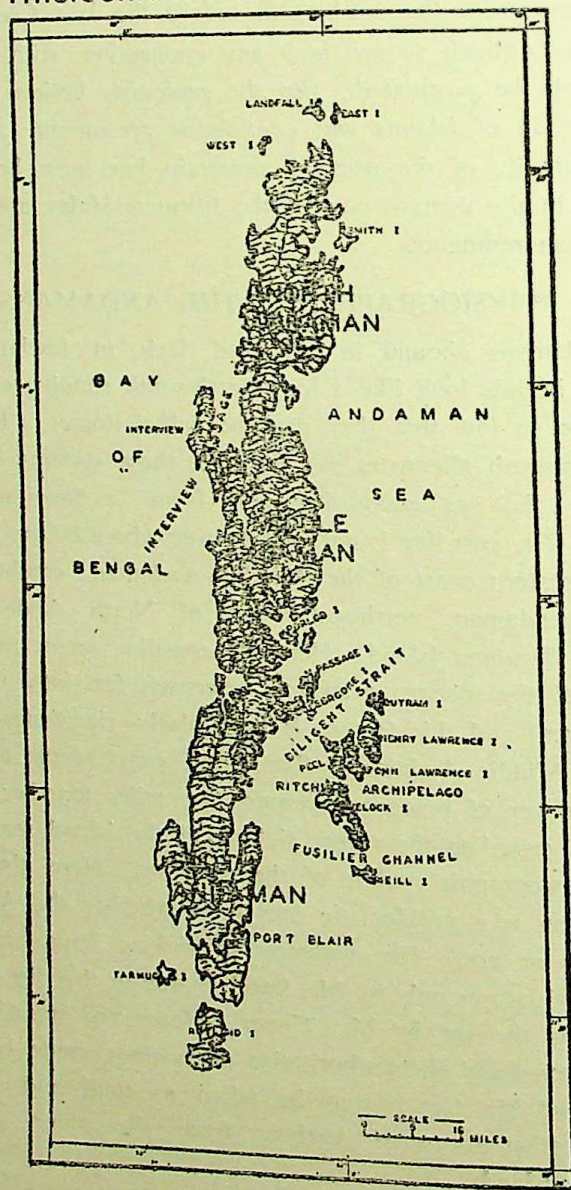
the mammalia took place because no indigenous land mammal occurs in any of these islands with the possible exception of a species of *Paradoxurus* and an insectivore which have been captured in the Andamans, but which, so far we know, do not occur in any of the Nicobar Islands. Again Boden Kloss (1903) from a study of the mammalian and avian fauna reached the conclusion that these islands were never connected with the mainland. Since the mammalia made their appearance towards the close of the Triassic period and the Andaman-Nicobar ridge did not apparently rise from the sea-bottom before the late Cretaceous epoch, it is certainly difficult to see how any connection with the mainland can reasonably be postulated. But the geologists believe that originally the whole chain of islands was continuous presumably above sea-level but the continuity of the original mountain has been broken by wide gaps which, in the western part of the Burmese-Malay arc, for example, are larger than remnants.

PHYSIOGRAPHY OF THE ANDAMANS

The Andamans abound in hills and lack in lowlands. From a distance the islands look like a long north-south running vista of domes. The hills are so low that they may be called domes. The hill-ranges have a north-south alignment and between these systems lie depressions where either the sea encroaches and forms a longitudinal bay or plain lands. The coast line is not broken everywhere but so in places such as the southeastern coast of the Middle Andaman, southeast coast of the North Andaman, northwest coast of North Andaman, western coast of the Baratang Island. Here the coastline seems to be of emergent type and the mangrove swamps encroach far into the sea (c. f. Sunderban area) and this feature is particularly significant in the east coast of the Middle Andaman. The whole coast seems to be mantled by a dense cover of mangrove swamps for miles together. The views of Mr. Kurz regarding the recent sinking of the island seem to be true from the physiographic outline of the coastline. Here also the answer of the question is a problematic one as to whether the Andamans are really sinking or not. The evidences of sinking have been argued to be due to local causes only by Mr. Swell or due to the slip of the coastal region towards the sea by Mr. Tipper. Hence the question is still a controversial one and the authoritative suggestions made by Mr. Swell, Mr. Tipper and Mr. Gee cannot be taken as final and this problem again needs other forms of analysis from the other morphological studies of the islands.

The Andamans consist of 204 islands of which the important islands of the main body from north to south are North Andaman, Middle Andaman, Baratang Island, South Andaman, Rutland and Little Andaman. Another group of islands lie some 15-20 miles off the east coast of Middle Andaman and they are primarily a group of a few islands-Neill, Havelock, Peet Is, Wilson Is, John Lawrence Is, Henry Lawrence Is, known as Ritchie's Archipelago.

PHYSIOGRAPHY OF THE ANDAMANS



As has already been said, main Andaman group of islands is of Eocene formation (with sandstones in the South and conglomerates in the North) and the Ritchie's Archipelago is of later formation i.e. of Miocene age, built up of clays and forminiferal limestones. From a symmetry of the alignment of the mountain ranges, the Andamans can be divided into a few physiographic regions.

(1) The Cholunga Range in South Andaman (it lies in the middle of the South Andamans) and its continuation through the mountain ranges along the west coast of Middle Andaman to Ranger Island.

(2) The Mount Harriet Range along the east of the South Aadaman continue through the Baratang range to the hill range of North Andaman.

(3) The West Coast Range has its continuation in the Interview Island.

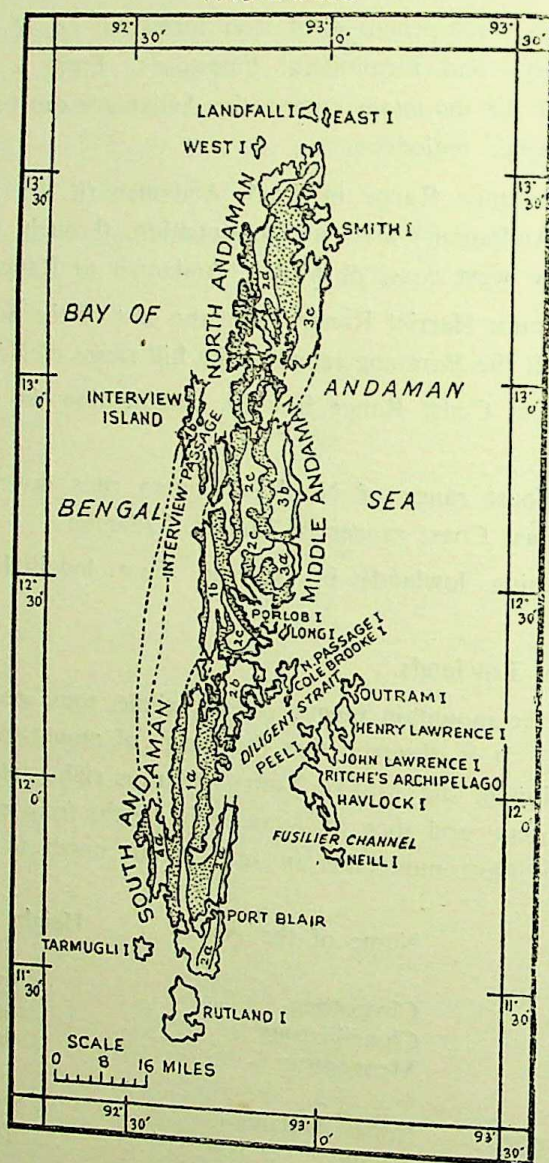
(4) East Coast range of North Andaman runs down towards the south to the East Coast ranges of Middle Aadaman.

(5) Intervening lowlands in between these longitudinal mountain ranges.

(6) Coastal Lowlands.

Regarding the mountain ranges, on the whole, some peculiarities have been observed. It is observed that this range of mountain system which is a continuation of the Arakan Yoma and runs right upto Sumatra has a gradual decrease and then an increase in height from north to south. A list of important mountains in series from north to south are as follows:—

		Name of the peak	Height above the sea level	
Arakan Range, Burma	Chypotong	...	8386	feet
	Chinsikiatong	...	6012	"
	Mengootsan	...	3600	"
Andaman-Nicobar ridge	North Andaman	...	2902	"
	Middle "	...	1678	"
	Little "	...	600	"
	Car Nicobar	...	200	"
	Batti Malv	...	150	"
	Choura	...	343	"
	Katchal	...	835	"
	Little Nicobar	..	1428	"
Sumatra	Great Nicobar	..	2705	"
	Batu Mukurah	...	6371	"
	Sinobong	...	12,140	"

PHYSIOGRAPHIC DIVISIONS OF THE
ANDAMANS

According to Swell, these variations in height are due to (1) an alteration of the pitch of the axis or (2) a variation in the rate of weathering and denudation in different regions. Swell says "A gradual fall towards the south and a subsequent rise in the level of the ridge, the differences between the highest peaks at each end, which rise to well over 8000' and the lowest of the peaks in the middle, namely, the island of Batti Malv which is only 150' above sea-level, is at the least some 8000' or approximately

1340 fathoms and it would appear probable that there has been, since the first formation of this mountain chain, a secondary depression that has lowered the level of the range in this area by approximately this amount." Molengraff¹ has called attention to the fact that similar depression, though on a smaller scale, exists further to the south in the continuation of the chain through the Malay Archipelago to the east of the Tima island, though on Tima Island itself there is incontestable proof of a post-tertiary elevation in the shape of a succession of coral reef terraces that are raised high above the present sea level.

The alignment of the hill systems in the Andamans, though not fully, but closely resembles the basin and range topography. In between the mountain ranges lie the longitudinal bays into which a number of very short torrential streams flow from both sides. The Andaman Committee observed that "the highest land wherever seen is on the eastern side" and that "the watershed is therefore chiefly to the west and it is consequently on that side that the marshy localities will most probably be found". But this observation is far from true which will be evident from the discussion below.

The east coast has really higher hills, but in the west coast also we find hills above 1000' in height (1109' in the Middle Andaman). Again, the second view is wholly untenable because of the fact that there is abundance of marshy localities in the east coast region than west coast.

Again, a greater number of rivers as well as the important ones viz, Batapur, etc. flow into the east coast.

West Coast Range of South Andaman and its continuation into the Interview Island is probably the lowest hill-system in the Andamans. The peak-height rises more than 800' ft. Typical sandstone topography is manifested in the landscape of the region where all the hills are flat topped.

The hill ranges of the west coast, especially of the south west being under the direct impact of the southwest monsoons are lower than that of the east because of greater rainfall in the west, particularly the southwest, which results in a rapid erosion of the hills and, consequently, lowering in height.

Cholunga Range and its continuation upto the Rangers Island are one of the highest ranges of the Andamans. It runs through the middle

1. Molengraff, G.A.F., Modern deep-sea researches in the East Indian Archipelago, Geog. Jour, 1921.

of South Andaman, where on its both sides are longitudinal bays. Further the range runs along the west coast of the Middle Andaman and merges into the Ranger Island. In this range the important peaks from south to north are Mt. Ford (1426') in Rutland, Cholunga (1057') and Cadell (1163') in South Andaman and one unnamed peak (1016') in the west coast of Middle Andaman.

Further east, the longitudinal range is the Mount Harriet Range which runs further north through Baratang Island and the middle of the Middle Andamans to the west coast range of North Andaman. The Mt. Harriet Range in South Andaman is the highest part of this region which rises steeply from the east coast of South Andaman and the peak heights are Mt. Harriet (1196') and Koyob (1509'). In Baratang and Middle Andaman the height of the range decreases considerably and in the former the height never exceeds 700' feet. Again, in the North Hudson peak-height of 1109' is observed.

Along the east coast of North Andaman and Middle Andaman lies the highest mountain range of the Andamans and next to it is the Cholunga Range. The important peaks in North Andaman are Saddle Peak (2402') and Jire Miku (2247'), the former being the highest peak in the whole of the Andamans. In Middle Andaman, peak heights of Mt. Dianolo (1678') and many others of more than 1000' have been observed.

In general the hill-ranges are low in height never exceeding 2500' and they send out spurs in all directions. On an average, of course, the east coast ranges are steeper than the west coast ranges and all these ranges are under the deep mantle of forest cover.

The depressions that lie in between the mountain ranges are either longitudinal bays and in a few cases river valleys. In between the west coast range and Cholunga range in the South Andaman are the Blair Reach and Dalrymple Reach and again in between the Interview Island and the North and Middle Andaman are the Buchanan Passage, Interview Passage and Austin harbour.

Between the Cholunga Range and its continuation and the Mt. Harriet Range and its continuation, lies the School Bay Creek in the South Andaman into which very short, non-perennial streams flow from the hill ranges of both sides. Again, in between the Baratang hill range and Cholunga Range continuation, lie the Amitla Doicha Passage, Needham Reach and Yaratil Jig, Melagi Bay, Lukhlriwath Bolyo and Arad Bay in the North Andaman.

In between the East West Range of North and Middle Andamans and the Harriet Range continuation in the North, lie the Blair Bay, Kalpong

Bay, Kalara Bay, Congo Bay etc. in the North Andaman and Betapur river valley and Bomlungta river valley in the Middle Andaman.

Hydrography.

The study of the hydrography of a region includes petamology (study of rivers), limnology (lakes), cryology (snow) and geohydrology (underground water). The study of limnology and cryology of this region can be completely omitted because there is a complete absence of both lakes as well as snows or glaciers. Of the rest the geo-hydrology of the Andamans is little known because no research work regarding this aspect has been conducted.

The petmology or the study of rivers is the most important object of hydrology. The rivers are very short, non-perennial as well as torrential in character. They can better be called as streams because of their seasonal drying up and short length. The Andamans enjoy quite heavy rainfall of about 130", but because of the seasonal fall, the water-level of the streams fluctuates very greatly and in the dry season most of the rivers either do not have any water or have only a trickle of water. Little water in the river valleys may also be partially due to the pervious nature of the soil which does not help the water-table of the region to be sufficiently high. The greater as well as continuous rainfall throughout the year in the South Andaman keep the rivers almost perennial.

The Middle Andaman has only a few little rivers and they are Betapur and Bamlangta rivers. Both of them rise from the hill ranges of the continuation of Mt. Harriet Range in Middle Andaman and flow through the longitudinal valleys, and are interrupted by a great number of spurs from both the eastern and the western hill ranges. The Betapur river rises in the north of Middle Andaman and flows towards the south with a number of tributaries from both the ranges on both the sides. Almost the whole of the northeast Middle Andaman is drained by the Betapur river and its tributaries. According to Mr. Sethi, the country from the place where the Picha Nala meets the Betapur stream, though interrupted by small hills, is almost level for 7 or 8 miles.

CHAPTER IV

CLIMATE OF THE ANDAMANS

The situation of the Andamans between $10^{\circ}30'$ and $13^{\circ}30'$ north latitudes and $92^{\circ}15'$ and $93^{\circ}10'$ east longitudes makes the climate of these islands of the tropical type which closely approximates to the Equatorial one in the south. The islands are frequently disturbed by tropical storms and cyclones in specific months. The insular position of the islands in the Bay of Bengal in between two countries in the east and west, situation in the tropical zone, location in the path of travelling tropical storms and cyclones in specific months, influence of the tropical maritime air masses in the south and the air masses of the subcontinent of India and other countries of Asia in the north, considerable north-south extension but appreciably small east-west extension, broken coastline and peculiar shape, and the dominant functional controls of the northeast and southwest monsoons in the specific months of the year have all combined together to give a distinct feature of the climate of the Andamans. The influence of all these factors, in giving a characteristic impress over the islands, must be understood before we consider the general conditions of climate and the division of the islands into different such regimes and the influence of climate on agriculture.

THE DIFFERENT CLIMATIC CONTROLS.

Insular Position and Shape.

The insularity of the islands is obvious because of their presence in the base of the funnel of the Bay of Bengal. The funnel is enclosed in the west and east by the east coast of the Indian mainland and the west coasts of Burma and Malay, and both these coastlines taper in the north in the deltaic region of Bengal. In the south the whole sea opens out and extends upto the Antarctica. The islands, being 192 miles long and 32 miles wide, when maximum, with a number of bays and creeks penetrating deep into the interior of the islands make no spot on the Andamans more than 10 miles from the sea. This has helped the development of the maritime conditions of the islands at its maximum and has therefore, led to a great moderating influence of sea on temperature.

Control of the Air-Masses All Around The Islands.

In the south of the islands is the presence of the tropical maritime air mass (mfu) of the convergent type which is characteristic of equatorial regions over continents and oceans. This type of air mass is highly charged with humidity and it produces abundant cumulonimbus clouds and consequently causes heavy showers, "even in the absence of strong trigger action. Then while neutral mfu air usually requires strong trigger action to produce heavy showers, convergent mfu air provides an environment in which strong convection is easily induced."

The trigger action for the movement of the air masses and consequent release of its energy in the form of rainfall is provided by the land mass in the north i.e. India as well as the whole of Asia. The conditions in July are highly favourable for the growth of a centre of low pressure in the northeast and a secondary one over the northwest India because of its continental character and simultaneously with it has developed a centre of high pressure over the Indian ocean south of the 30°N latitude. Such a development of the pressure gradients necessarily initiates the energy for the movement of the heavy air masses over the Indian ocean towards the northwest and after crossing the equator towards the northeast. This is what is known as the southwest monsoon which because of its passage towards higher latitudes (with a gradual decrease in temperature) accelerates the tremendous release of the energy of the air masses and causes a very heavy rainfall. The Andamans facing the full force of the southwest monsoon experiences heavy rainfall during this season and during this period the maximum rainfall occurs in the islands.

In the cold-season, with the beginning of January, the conditions are reversed. The former seats of low pressure are replaced by high pressure and the comparatively heavier air masses move towards the south (in general sense). The winds from the Indian mainland as well as China blows towards the south and a major stream in the Bay of Bengal. Here again the islands experience rainfall of the northeast monsoon which is comparatively lower in amount.

Location of the Islands in the Path of the Travelling Tropical Storms and Cyclones.

The tropical cyclones originate in low latitudes within or along the margins of the equatorial calms. Generally the tropical cyclones do not

1. Trewartha, G. T.—An introduction to climate, Methuen, London.

originate within areas of prevailing steady or strong winds. It has been investigated by S. C. Roy and A. K. Roy¹ that the cyclones are predominant over Bay of Bengal during the transition period. "In the beginning of the hot weather in India in April, a slow current of the southwesterly winds of local origin sets in the north of the Bay of Bengal. The winds become irregular in the southern parts of the Bay. But northerly and northwesterly winds of land-origin still prevail on the Arabian Sea. By May the southwesterly winds of local origin dominate the whole of the Bay and set in also over the west of the Arabian sea. During this transition period oceanic air of great depth occasionally penetrate into the south of the Indian seas. The overrunning of the local southwest winds by the oceanic winds or the encounter of the northwest land winds with the oceanic winds result in the formation of cyclones."

Andamans not only experience the tropical cyclones during the transition period but also a number of typhoons, which originate in the China seas; their remnants, after travelling across south China and Burma or across Indo-China and Siam, intensify again into storms in the Bay of Bengal. Hence the full force of these storms are experienced in the islands.

TABLE I
Frequency of Cyclones

	J	F	M	A	M	J	J	A	S	O	N	D
Bay of Bengal	2	0	1	8	18	9	3	3	5	27	16	8

TABLE II
Percentage frequency of severe cyclones

	J	F	M	A	M	J	J	A	S	O	N	D
Bay of Bengal	0	0	2	8	18	5	3	2	8	22	24	8

GENERAL CLIMATIC CONDITIONS

The islands have very little annual variation, being 3° to 5°F for mean temperature and 4° to 7°F for mean maximum temperature. The annual mean maximum temperature varies from 85° to 87°F, and mean minimum from 75° to 77°F and mean temperature from 79° to 82°F. The relative humidity is also very high and the average is 80%.

¹ Roy, S. C. & Roy, A. K. Structure and Movement of Cyclones in the Indian seas,

The high temperature coupled with the high relative humidity gives rise to a high sensible temperature. The weather is always warm and very sultry but is tempered to some extent by the pleasant sea breezes.

There is no rainless month in the South Andaman and the rain is received both from the southwest and northeast monsoons. As one goes towards the north of the islands the amount of rainfall decreases. During the southwest monsoon rain continues for days together.

During the transition period there are frequent cyclonic disturbances in the islands and some of them are so violent that they create havoc to navigation as well as settlement.

The diurnal variation in temperature is not at all great and the sky is at any moment overcast with clouds which may cause rainfall from a few minutes to a few hours.

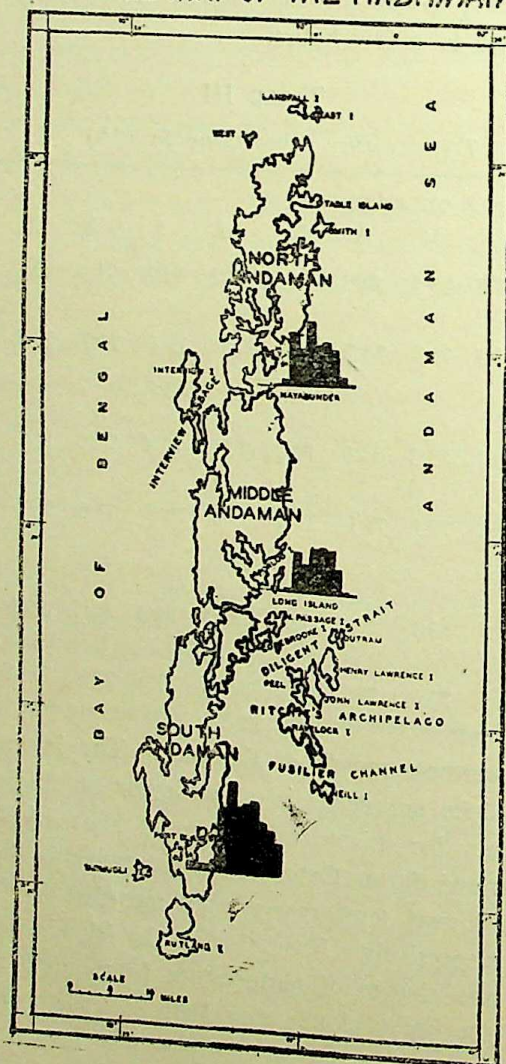
TABLE III
Temperature conditions in (°F)

<i>Port Blair (11° 40' N & 92° 43' E)</i>												
	J	F	M	A	M	J	J	A	S	O	N	D
Mean												
Maximum	84.2	85.5	87.5	89.1	86.7	84.3	83.8	83.4	83.1	83.9	83.9	83.6
Mean												
Minimum	71.6	70.5	71.5	74.7	75.6	75.0	75.1	74.7	73.8	73.8	73.5	72.9
<i>Long Island</i>												
Mean												
Maximum	85.7	79.2	83.3	84.8	84.2	82.8	81.4	81.0	80.1	83.0	82.2	81.8
Mean												
Minimum	72.7	74.6	77.1	78.1	79.8	79.8	78.6	78.6	78.0	78.8	76.9	76.9
<i>Mayabunder</i>												
Mean												
Maximum	83.6	79.5	83.1	85.1	83.9	82.5	81.4	80.7	80.1	82.1	82.4	80.9
Mean												
Minimum	71.6	74.9	77.6	79.2	79.5	79.4	77.9	77.9	77.18	75.9	7.5	75.5

April is the warmest month of the year. The lowest mean temperature, however, does not occur in a particular month in all the parts. There is a tendency for this to take place in February in the northern half of the islands and during October and November in the southern half. The highest and lowest temperature ever recorded in the islands are 97°F and 62°F respectively. Even though the islands have a latitudinal extension of 3°, the change of temperature from north to south is not marked. Due to the heavy clouds over Port Blair, temperature is appreciably reduced.

Rainfall Conditions

The islands experience fairly good rainfall, as already said, from both the southwest and northeast monsoons. The southwest monsoon brings the maximum amount of rainfall. The regional distribution of the rainfall is very uneven. The Table Island situated in the north-east part of the islands has an annual average of 76", Long Island off the east coast of the Middle Andaman 55.95", Mayabunder 69.12" and Port Blair in the South Andaman 123". Broadly speaking, the amount of rainfall decreases as one goes towards the north as well as to the northeast. The southwest region experiences the maximum amount

RAINFALL MAP OF THE ANDAMANS

CLIMATE OF THE ANDAMANS

31

of rainfall because it comes first under the impact of the southwest monsoon. As the old observatories at Port Blair and Nancowrie are located on the leeward side it is probable that at stations on the windward side in these areas the rainfall is heavier (probably more than 140"). This greater amount of rainfall helps the development of a denser tropical vegetation in the western coast.

The southwest monsoon burst over the South Andaman by about 20th May (15th June at Calcutta) accompanied by thunder and rain. In May the number of rainy days is 16, in June 21, in July 26 and in August almost on all days. But the amount of rainfall is not maximum in August (16.29") which is so in the month of June.

The two periods of maximum precipitation are

- (a) May and June, and
- (b) September and October.

which correspond to the beginning and the end of the southwest monsoon.

The rainfall of the northeast monsoon begins from the month of October.

January and February are almost rainless months in the northern stations. Port Blair experiences rainfall almost throughout the whole year but the fluctuations of seasonal rainfall are quite large (1.11" in February and 21.75" in June). The highest annual rainfall recorded during the last 60 years is 150" and the lowest is 84".

TABLE IV
Rainfall in inches

	J	F	M	A	M	J	J	A	S	O	N	D
Port Blair	1.79	1.11	1.12	2.36	15.13	21.75	15.43	16.29	17.40	12.51	10.52	7.92
Long Island	0	0	0.11	0.48	9.65	6.62	10.62	10.68	10.30	6.00	0.87	0.62
Mayabunder	0	0	0.19	1.20	12.10	8.38	15.43	9.94	10.00	8.81	2.03	0.92

Table Island—Data not available.

Humidity

It is high throughout the year being highest during the southwest monsoon when the average is as much as 90% and on individual days the atmosphere may be saturated. The lowest humidity occurs during December to February when it varies from 72 to 75%. The annual variation is about 15%. The humidity in the south is more than in the north.

Clouding in all the months is more than 13th of the sky and is maximum in the monsoon months being about 8 to 9/10ths. On 2 out of 3 days, sky is overcast in these months.

Wind

The islands are generally windy, particularly Table Island and Port Blair where in July the average wind speed is 15 m.p.h.

TABLE V
Mean daily wind speed in m.p.h.

	J	F	M	A	M	J	J	A	S	O	N	D
Port Blair	8.8	7.1	5.9	8.6	13.7	15.9	13.4	10.4	7.6	8.4	9.1	9.5
Table Island	6.9	6.1	5.7	6.0	10.4	15.0	16.2	12.2	7.6	7.1	8.0	9.0

During November to February, winds are mainly from the north and east and during southwest monsoon months from west and southwest. The months of March and April are transition months.

Thunder

The islands experience thunders in about 45 days out of a year. From March to October, each month experiences more than 3 thunders. The most thundery months are April, May and June with not less than 8 thunders a day.

THE CLIMATIC SEASONS

As already said, the temperature of the Andamans is more or less uniform throughout the year but the rainfall fluctuates with the change of season. In spite of the equable nature of the climate, a few climatic seasons are experienced in the islands because of the mechanism of the two monsoons in two specific periods, passage of cyclone during the transition time etc.

- | | |
|-----------------------------------|----------------------------------|
| (1) Cool season | — From December to February |
| (2) Hot season | — From March to Mid-May |
| (3) Southwest monsoon season | — From Mid. May to Mid. October. |
| (4) Post southwest monsoon season | — From Mid. October to November. |

Cool Season

This season has a mean maximum temperature of about 83° to 87°F and a mean minimum temperature of 71° to 78°F. The temperature is not at all low as compared to the maximum one. A temperature below 60°F has never been recorded in Port Blair.

Port Blair records 8" rainfall in December. 1" to 2" in January and February. In the stations of the north these months are almost rainless. However some very heavy falls, 11.6" in a day in December, 8.2" in January and 5.2" in February have been recorded. Some severe storms are experienced in this season which are formed in the neighbourhood of the Nicobars, usually to the northwest. Occasionally some storms formed in the southwest part of the Bay proceed northwest and north and finally recurve into the northeast and affect the Andamans. More than 70% of the winds in this season blow from the north, northeast and east. As one goes towards the south pressure decreases but the pressure gradient is low.

Hot Season.

April is the hottest month with a mean maximum temperature of 89° to 90°F and a mean minimum temperature of 75° to 80°F. Even during the hottest spells the temperature does not exceed 97°F. Generally little amount of rain occurs in March and it increases in April and very much in May. Rainfall in April and May are of thundery type usually occurring in the afternoon and the evening. On an average 8 thunderstorms are experienced during April and May. The number of tropical storms also increases from March to May. Many of the storms in April and in the later part of the month originate in the neighbourhood of the Andamans, usually to the southwest of them. The storms generally move towards the north and the northwest and recurve later. Some storms which from during the first fortnight of May originate in the Andaman Sea and move either northwest or northeast causing heavy rainfall.

The winds, in the month of March, generally blow from the northeast, northwest and east directions and there are considerable number of calm days (wind speed 5.9 m.p.h.). In April the wind directions are more or less the same but with the gradual change of the pressure system more wind is found to move from the southwest and west and in May the predominant winds are from the west and southwest. The wind speed is high (8.6 m.p.h.) These features indicate the beginning of the southwest monsoon.

The Southwest Monsoon Season.

The monsoon breaks out over the islands by about the 20th May accompanied by thunder and rain. The rainfall gradually increases and reaches its peak in June at Port Blair, in August in Long Island and Mayabunder. Towards the end of the September, remnants of typhoons

of the China sea move across lower Burma and affect the North Andaman sea. The influence of these typhoons are particularly felt in the North Andaman.

In July, heavy falls of 15.85" have been recorded in 24 hours at Port Blair. The sky is overcast with clouds for days together. This appreciably reduces the temperature. The mean maximum temperature is 84.3°F and mean minimum temperature 75.0°F in July, the characteristic month of this season.

Post Southwest Monsoon Season.

This is the period of cyclonic disturbances. These cyclones of dangerous severity commence as feeble circulations and they have a progressive movement, with the stormfield advancing on a curved or sometimes a straight tract. The average velocity is about 200 to 300 miles per day. A general picture of the tropical cyclone is given below.

In front of a tropical cyclone the sky is covered with high clouds in which halos sometimes appear. The air becomes sultry and oppressive; the wind falls almost to a calm and on the oceans a heavy swell rolls up. In the next stage, a breeze springs up, the clouds become lower and heavier and pressure begins to fall. Afterwards heavy rainclouds appear, first on the horizon and then advance across the sky; as the rain clouds pass overhead, the rain falls in torrents. The wind becomes fierce while barometer falls rapidly. High or tremendous seas are superimposed on the heavy swell. The sea sprays and rains destroy all visibility. When the wind has reached its greatest violence, suddenly the centre of the storm arrives. Here the wind suddenly drops from hurricane force to a light unsteady breeze, or sometimes to a complete calm. At the calm centre the lowest pressure is recorded and often there is a complete absence of low cloud and rains; the sun, moon and stars may be visible according to the time of day when the calm centre is traversed. Following the passage of the centre, the wind suddenly increases to hurricane force again but from the opposite direction; the torrential rain is renewed and barometer rises as quickly as it fell. As the end of the storm approaches, the wind falls and the rain clouds break and disappear leaving only the high clouds. Finally the wind drops, the sky clears and the pressure becomes normal. The average number of storms is about one per year. In November, the frequency of the storms that affect the area is about the same as in October and more than one in every two is likely to be severe.

CLIMATIC REGIONS

It is difficult to divide the islands into climatic regions. The islands having only a length of 192 miles and a width of 32 miles, when maximum, may bring out some changes in the climatic elements from north to south but little change from east to west. Whatever variation is found from east to west, is due to the presence of the north to south running hill systems.

If we consider the rainfall of the islands, it decreases as one goes towards the north and the east. The primary reason is the fact that the southwest monsoon causes heavy rainfall in the south and as it moves towards the north its rain bearing capacity decreases and ultimately causes less rainfall. Besides this the micro-climatic factors have important roles. The north-south system of hills evidently results in a greater rainfall in the west and more correctly on the windward side and an appreciable decrease in the leeward side. The northwestern monsoon as well, causes some rainfall in the northern and the eastern section of the islands. As such an increase in annual rainfall amount is experienced in the Table Island, situated in the northeast extremity of the North Andaman.

The temperature, as discussed previously, is almost the same in all the stations during the whole of the year.

Hence if any attempt is made for a division of the islands into climatic regions, the rainfall stands as the most important factor. As the islands have got only 4 stations, all of them having insufficient data¹ except Port Blair, which are all situated in the east coast of the Andamans, the successful division of the islands into climatic regions becomes impossible.

1. All the 3 stations except Port Blair.

CHAPTER V

NATURAL VEGETATION

"The Andamans present much variety in soil formation and there is accordingly a corresponding diversity of the vegetation."¹ The whole of the islands has an almost unbroken tropical type of forest. Unlike most of the countries, the islands have not been cleared of forests and still they occupy almost the whole of the islands except some areas around Port Blair in the South Andaman and a few other scattered spots. But the programme of settlement of the refugees from East Bengal and of some people from South India needs the clearance of forests² for providing rooms for settlement and the optimum amount that should be cleared for maintaining a perfect regional balance of the country is a highly controversial issue.

The general botanical aspect of the islands is a deep cover of forests throughout the whole of the islands, the average height of the trees being 100' ft. with straight stems and being covered in places entirely by creepers which hang from the top of the trees like festoons. Amongst these lianes the *Dinorchala Tjangkorreh*, *Entada Purshaeta*, *Calamus* and *Dischidia nimmulia* have been recognised. There is an intense undergrowth of luxuriant plants making the forests impenetrable. It is observed by Mr. Kurz that the straight growth of the trees disappears, however, south of the South Corbyn's Cove and along the western coasts a more stunted vegetation occurs, the mean height of the vegetation being 80' ft. Along the last named region, the trunk of the trees are bent showing some tendency of those trees to be in conformity with the direction of the southwest monsoon.

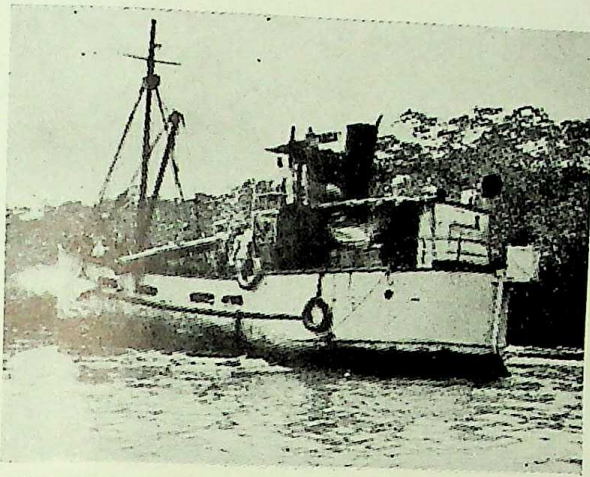
TYPES OF FORESTS

Depending upon the nature of topography, the soil and the availability of water, 3 main types of forests have developed in the Andaman Islands. They are

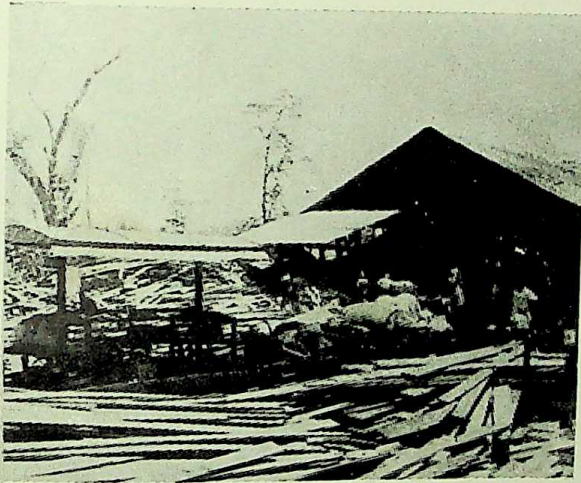
- (a) The Evergreen Forest,
- (b) The Deciduous Forest, and
- (c) The Mangrove Forest.

1. Kurz, S—Report on the vegetation of the Andaman Islands.
 2. The clearance of forest is continuing for settlement in the islands.

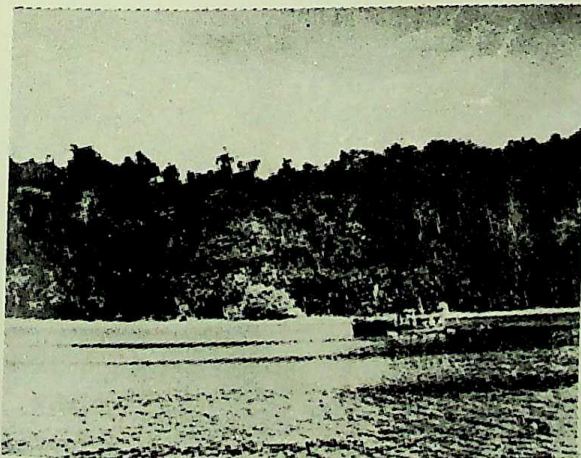
CHAPTER V
NATURAL VEGETATION



A timber carrying
launch of the
Andamans.



A view of the Saw
Mill at Chatham
Island.



A view of the natural
vegetation along the
Sea coast.

The Evergreen forests are obviously concentrated in the regions of perennial water supply of water and therefore, are found in the moist valleys of the fresh water streams and also on the high hills as they experience relatively greater amount of rainfall. The principal trees are various species of Garjan (*Dipterocarpus*) associated with Black Chuglam (*Myristica irya*), Lalchini (*Calophyllum spectabile*), Toungeping (*Artocarpus Chaplasha*) etc. besides a number of minor species.

The Deciduous forests exist primarily on the lower and more gentle slopes of the hills. Padauk (*Pterocarpus dalbergioides*) forms the principal tree associated with Canarium euphyllum, Papita (*Sterculia campulata*), Koko (*Albizzia lebbek*), Didu (*Bombax Chaplasha*), Pyimma (*Lagerstreamia hypoleuca*), White chuglam (*terminalia bialata*). Besides these few important species, a host of other types of trees are found in the islands but they are not so important from the point of view of revenue.

The Mangrove forests are widespread almost all along the coasts and especially along the estuaries of many creeks in a belt varying from a few yards to over a mile in width. As the creeks penetrate deep into the islands, the mangrove forests are also found to do so. The species of importance are *Bruguiera gymnorhiza*, *Rhizophora Conjugata* and *Mucronata*. The first one of them is of supreme importance which grow in pure stands. It attains a height of 70 to 80 feet and a girth of 5 feet.

Economic Value of the Forests of the Andamans.

The forest resources hold a key position in the list of the resources of the islands. The tropical vegetation in spite of its luxuriance, is generally much inferior to the temperate forests from the economic point of view. The absence of the growth of the different species in pure stands, the non-availability of the dense tropical vegetation, a sultry climate being incongenial for the tiresome and strainous labour required for lumbering operations and the great distance of the forest areas from the areas of consumption are the factors which have decisively proved the inferiority of the tropical forests. In many parts of the tropics, the forests being accessible and having good communication facilities, have paved the path for the development of the lumbering industry. Only because of these advantages the forests of the Caribbean Islands, Puerto Rico etc. have been virtually exhausted and many of the southeast Asian countries have started it at a very rapid pace.

The forests of the Andamans, in spite of their luxuriance, do not have very many valuable species though a few of them are useful for a large

number of purposes. The important species are padauk (*Pterocarpus dalbergioides*), garjan (*Dipterocarpus* spp), white dhup (*Canarium euphyllum*), papita (*Sterculia campanulata*) and the other ones of lesser importance are koko, white chuglam, lakuch, thingan, ywegi, lal bambwn, etc. A classification of the species according to their economic value and uses has been attempted below.

Class I type—Padauk, Koko, Chuglam, Marble wood and Satin wood.

Class II type—Pyimma, Bambwn, Chai Lakuch, Lakuch, Lalchini, Pongyet, Thitmin, Mowha, Khaya, Gangaw, Thingau.

Class III type—Didu, Ywegyi, Toungepeingyi and Garjan.

Of the class I woods, the padauk is of the most superior quality. Its average weight is 48 lbs. per cubic foot. It is a deep red wood, often with darker streaks, moderately hard and durable and seasons well and takes a fine polish. Some trees produce pale coloured wood, known in the trade as 'off colour' padauk which though good for construction purposes is of less value than the red padauk for ornamental use. Padauk is generally used for building boats, furniture, fine joinery and for all purposes to which teak, mahogany, hickory, oak and ash are applied. It is immune from the attacks of white ants and borers, except the marine worm (*Teredo navalis*) and from rats of all kinds.

The koko is of the colour of greenish grey or light brown or chocolate with dark markings with an average dry weight between 45-50 lbs. per cubic ft. It is not so hard and lustrous like padauk and as such is used in battons and furniture making.

The white and the black chuglams are of grey colour with darker markings. They are generally used for furniture, shafts and planking.

The marble or zebra wood is ebony with streaks of grey or light brown. It is used generally for furniture joinery makings.

The stain wood¹ is generally yellow in colour and it is soft and light. It is used for the manufacture of delicate furniture.

The Class II woods are used for a great variety of purposes. The pyimma is of considerable importance in the export list of the trees. The average dry weight is about 40 lbs. per cubic foot and is pale in colour, hard, durable and seasons well but swells when wet. It is largely used for building purposes specially as beams of the roof.

These informations were collected from the Forest Department, Andamans.
1. It is confused by many with the Satin Wood of Ceylon.

The bombwn is the second most important type in the Class II type of woods. It has an average weight of 40 lbs. per cubic ft. and is generally yellowish grey in colour with darker streaks. The durability of the wood is quite long but it cannot stand exposures. It is generally used for making of furniture and joineries.

The rest of the woods have also got an widespread application in a variety of purposes e.g. house building, shipmaking, carriage and furniture making. But the amount exploited from the forests is not of significance.

The didu and garjan are the most important in the class III type of woods. The former is of reddish grey or yellowish in colour and is very soft and light. As such it is widely used in the making of packing cases for tea specially. The garjan is of the greatest demand of the Andaman forest woods. It has an average weight of 45-56 lbs. per cubic foot and is moderately hard. It is reddish grey to reddish brown in colour and is of moderate duration and as such the wood cannot be used for railway sleepers unless treated. It is used for planking and wood-paving now-a-days.

Ywegyi, being not a durable and hard type of wood, is generally used for the making of inferior cabinets. The trees yield a yellow dye which is also of wide use.

Besides these, there are a host of other forest woods such as the several species of bamboo, cane, thatching palms etc. (For the industries based on forest products, see the Chapter on Industry.)

Forest Working.

The exploitation of timber from the forest has been attempted since the formation of the penal colony in the islands. For the systematic working of the forest, a Forest Department was opened in the year 1883 and a saw mill at Chatham was established in 1915 with a monthly outturn of 100 tons. But this was closed and another saw mill was set up by the Burma Trading Company having a monthly output of 750 tons and a second mill, an American circular mill in Chatham in 1927 and another mill in the North Andaman in 1925. But fortunately the wanton destruction of the forests was not possible because of the limited convict labour, and the fear of working in the aborigine-infested areas. The elephants were proved to be uneconomical in the exploitation of forest and an attempt for replacing the elephants by skidder was made in 1930. But the latter one was found to be uneconomical compared to the elephant power and this resulted again in the engagement of elephant

power in the forests. The net revenue of the forests from 1869 amounted to Rs. 45,65,764 inclusive of a capital asset of Rs. 21,39,983.

The present day forest exploitation has to some extent been revitalised with the introduction of regenerating processes and use of diesel engines for the trams carrying logs from the spot of exploitation to the jetty wherefrom it is carried down to Port Blair for sawing and finally exported to the mainland and London. The working of the forest in the Andamans and its preparation for marketing undergo a number of stages. After a proper survey, a spot of exploitation is selected where a forest camp is opened near the jetty with a sufficient strength of imported labourers from India. The forest camps are erected with local timber and the exploitation proceeds from the spot in the immediate neighbourhood of the jetty (exclusive of the mangrove forests) to the interior regions. Along with the expansion of the exploitation area, tram lines are laid down from the jetty onwards. The felling is done by chiselling the trunk of the trees and then it is pulled by a few elephants for breaking it down. This completes the felling of the tree and after properly cutting all the branches, the logs are carried by an elephant with the help of his trunk and are unloaded from the tram. Afterwards, it is taken to the jetty where the logs are again unloaded and rafted in a tank-landing craft to make them ready for transportation to Chatham Island where it is shown into standard size (not always) and is exported to the markets. The transportation of the logs from the spot of exploitation to Port Blair is always done on water ways. The success in the transportation of the logs have been facilitated by the innumerable harbours and creeks making easy the passage of the boat into the interior parts of the islands and it is found that the average drag seldom exceeds a mile and at the same time exploitation requires some experience of local conditions and foresight, as the coastal areas are exposed to the open seas and advantage has to be taken of the different seasons of the year to work in different tracts.

The yield of merchantable timber is only 15 tons per acre. An assessment of the future potentialities of merchantable timber with the introduction of the present method of regeneration has been given by Sri Chengapa¹. The sustained or perpetual yield of the forests is about 135,000 tons per year and according to him, with the introduction of the present method of regeneration, the yield per acre is expected to be as much as 75 tons per acre, a five fold increase of the present yield. The

¹ Chengapa, B. S. — The Andaman forests and their development; Census of India, 1951, Volume XVII, Andaman & Nicobar Islands by A. K. Ghosh.

approximate estimate of the output of the different types of timber is given below.

Annual yield — 675,000 tons,

Padauk — 7000 tons, Garjan — 28,000 tons, White Dhup — 21,000 tons, Papita — 28,000 tons, Koko — 500 tons, White Chuglam — 7,000 tons, Black Chuglam — 2,500 tons, Pynma — 1,500 tons, Badam — 11,000 tons, Didu — 7,000 tons and others — 14,000 tons.

Source: Chengapa, B. S.—The Andaman forests and their development; Census of India, 1951, Volume XVII, Andaman & Nicobar Islands by A. K. Ghosh.

The limitations in the exploitation of the forest resources of the Andamans are not few. The problems faced upto 1934-35 were primarily because of the inefficient methods in the extraction of timber and absence of due attention in the regeneration of the forests. Previously the exploitation was confined only to the coastal areas because of the easy accessibility, but the vast tracts of rich resources in the interior remained virtually untapped in the absence of any economic device. The construction of an experimental tramline in the Rangat valley, however, proved successful. The regeneration of the forests was also little cared for. The new plantations hardly exceeded 100 acres though the exploitation was widespread over large areas. Improvements in the line of regeneration were discernible since the year 1932 and marked improvements were brought about by the year 1936-37. According to this new device, the old crop is removed in two or more successive fellings allowing nature to do the sowing.

However, some of the limiting factors in the exploitation, transportation and marketing of the forest products are given below.

(1) The selection of the forests for exploitation is made from a very vague idea and proper surveys are hardly undertaken to realise the actual conditions in the fields which really happen to be quite different from theoretical speculations. It is found that many forests specially in the North Andaman are yet to be explored. Hence the insufficiency of knowledge regarding the forests has made the proper selections of the actual spots of exploitation an impossibility.

(2) The forest working in many regions have to be abandoned because of the seasonal water-supply.

(3) The trees in the forests do not occur in pure stands and hence random felling operations are done irrespective of the type of trees. It is estimated that the total wastage of timber in the Andaman forests is approximately 1 crore of rupees in value.

(4) The amount of exploitation of timber in the Andamans reflects the nature of demand and its amount. The demand being highly elastic so long, the exploitation, in consequence, has suffered. The sale system of timber is far from satisfactory as the prices of the timbers are informed by the farms who buy them and on this basis the prices of the timbers are fixed and Sri Shivdasani writes¹ that "the purchasers themselves are the suppliers of information on which the department fixes the price. The effect of refusal to sell to anyone who wants the produce is to eliminate one of the main price determining factors i.e., extent of demand. The tendency of selected purchasers who become middlemen and pass on the timber to consumers after keeping a profit for themselves is to be more interested in buying those varieties of timber produced that have the best market. At the hands of the selected purchasers the marketing of Andaman timber cannot receive the attention required to ensure that as many categories as possible are sold. The interests and profit of the selected purchasers came first. Not only are they in a position to obtain disproportionate profit but the fixing of the price of such an important commodity being left to negotiations between one officer² and interested purchasers is fraught with other dangers also."

(5) The problem of labour supply is also not satisfactory. Local labourers are not available because of their reluctance to do all these jobs. Labourers are to be brought from the mainland and they are either Ranchi or South Indian labourers.

The immediate steps that should be taken for the proper working of the forest are the fundamental change in the sale-system, addition of transports facilities from the Andamans to the mainland, formation of a permanent source of local labourers and proper surveys before the forests are worked. Regeneration of the forests have been introduced in recent times. The over importance given by the Forest Department to a few farms in the sale of Andaman timbers has led the department to be a tool in the hands of the farms. The sale of these timbers should be made to any farm found suitable by the Forest Department after proper consideration and the fixation of the price should also be determined by the department.

Unless the transportation facilities of timbers from the islands to the mainland are increased, the amount of forest working can hardly

¹ Shivdasani, H. R.—Report on the possibilities of Colonization and development of the Andaman and Nicobar Islands, 1949.

be accelerated. It is believed that the demand for timber in the mainland is so much that it can easily absorb as much timber as the islands can produce. The transportation problem, is one of the, if not, the most important limiting factor in the amount of forest exploitation. In this connection, it may be recalled that the Forest Department can hardly cope with the forest clearance as well as find a market for the timber in the recent colonisation scheme in the country. These are obviously due to the scarcity of labour supply, shortage of elephant power, labour supply and transportation facilities.

CHAPTER VI

SOILS

Soil is the unconsolidated material on the surface of the earth. The origin of the soils has been attributed to different factors and in the early days, it was a common belief that the soil is the outcome of the disintegration of the parent material. As such, the soils were believed to be very much akin to the parent material. However, the concept of soil formation has been thoroughly revolutionised by the Russian pedologist, Dokuchaev in 1879 and afterwards developed by Sibirtsev in 1901, Glinka in 1914 and other Russian scientists. Dokuchaev was the first pedologist to propound the theory that a given parent material may form different soils depending upon the environmental conditions.

Soil Forming Factors

The most decisive factor regarding the distribution of soil types has been attributed neither to the parent material nor to the climatic conditions, but due to combined effects of climate, micro-organisms, topography, parent material and time, of which the first one is the most dominating factor according to the celebrated pedologist, Glinka.

According to Lang, the soil may be arranged in relation to the rain factor. So far the Andamans are concerned, the temperature does not show any appreciable regional variation but the rainfall does so. In the Andamans, the gradual decrease in rainfall is experienced as one goes from west to east and from south to north (For details see the Chapter on Climate). Besides this, the variation in rainfall is marked in a small area because of the juxtaposition of high lands and valleys. Under such conditions, the division of the Andamans into different soil regions is extremely difficult unless a detailed soil survey for the islands is undertaken. With the existing knowledge, the soils of the Andamans can be broadly divided into three types.

1. Soil of the hilly region.
2. Soil of the valley region..
3. Soil of the coastal region.

Soil of the Hilly Region

These regions are characterised by hot and humid climate. The soil is low in organic matter, strongly leached, rich in clay, and more or

less yellow in colour. The texture (by feel) is clayey. But from the few soil samples, collected by the author, a generalisation will be far from satisfactory. Generally brick coloured soils are found over the serpentine rocks e.g. in the Saddle Peak area, Rutland and parts of Mount Harriet Range. The brick colour is evidently due to excessive leaching and consequent increase of the Fe-Al content.

Soil of the Valley Region

The samples of the valley region were taken from Dhani Khari area in the South Andaman and the Rangat area in the Middle Andaman. The texture (by feel) is clayey having more than 50% clay. It is rich in silica. The structure is more or less of platy type. The greyish or blackish soils with considerable quantity of siliceous materials are found covering the indurated chloritic or greenstone rocks in the Middle Andaman.

Soil of the Coastal Region

There are deep penetrations of creeks of the sea into the land giving rise to the mangrove swamps (c.f. Sunderbans). It is highly saline in character giving rise to halophytic types of vegetation. The texture of the soil is coarse.

Soil Erosion

In general, the soil cover of the Andamans is not very thick (4") which is highly susceptible to erosion due to the undulating nature of topography and high rainfall. Vast tracts of forest areas are being cleared for the settlement of refugees from East Pakistan and the menace of soil erosion has shown its early indications. For a continued upkeep of the fertility of the soils, the menace of the soil erosion should be checked by careful clearance and regeneration of the forests and also by proper agricultural devices.

CHAPTER VII

MINERAL RESOURCES

The mineral resources in the Andamans were believed to be bountiful. There had been mentions in the earlier notes of many travellers and historians (e.g. Nicolo Conti) about the richness of the islands in gold and they have gone so far as to call these islands as the "Island of Gold". But unfortunately no gold has yet been found in the Andamans nor is there any reason to suppose that it will be found. In this connection it may be recalled that Dr. Helfer, a Russian Geologist was killed by the aborigines while he was making geological prospecting in search of gold. M. V. Portman discovered specimens of various minerals in the neighbourhood of Port Blair and they are chromium, copper, iron and sulphur. As such the land seemed to be sufficiently promising and Mr. Mallet¹ proceeded to Port Blair for further investigations. But unfortunately no important deposit of any mineral has been found to occur except some nests of lignite and bands of pure limestone in scattered places and in the serpentine rocks specially in the northeast part of Rutland occur small crystals of bronzite.

A few miles south of Port Blair near about Rangachang, highly altered and eruptive rocks are found being traversed by veins, the main constituent of which is hematite, but which consist of a considerable portion of pyrite (iron pyrites) and chalcopyrite (copper pyrite) in much smaller quantity.

Of the above-mentioned minerals, none are found to be economically exploitable. It has been argued that the Andamans cannot be rich in minerals because the Arakan Yoma of Burma also shows a barrenness in minerals and the only ores which need be noticed for practical purposes are those of tin, iron, lead, copper, antimony, none of which save iron, are known west of Sittang. But the apparent barrenness of the Arakan hills, however, can not be taken as conclusively proving that the Andamans are equally unproductive. It is believed that the Japanese carried out a full mineral survey of the islands and are reported to have found deposits including coal, iron and precious stones.

1. Mallet, F. L. On some of the mineral resources of the Andaman Islands in the neighbourhood of Port Blair, Rec. G.S.I. Vol. XVII, 1884.

Coal:

It is of very poor quality and occurs in pockets in the sandstones, associated with poorly preserved leaf impressions. No sign of continuous seam has been observed in the islands. The coal deposits of the islands are of the same age as the coal bearing strata of Beluchistan. But unfortunately no coal is economically exploitable.

Under such circumstances of poor knowledge regarding the minerals of the islands, nothing can be said regarding the future mineral position of the islands. Immediate measures should be taken for the proper mineral investigation of the islands for future programmes of setting up industries.

PART II
CULTURAL BACKGROUND

CULTURAL BACKGROUND
PART II

CHAPTER VIII

THE PEOPLE

The study of the people of the Andamans is rendered extremely interesting by virtue of the great diversities in the types of population. Obviously for the islands like the Andamans the diversities of population are far out of proportion. The islands remained as an abode of the aborigines, the negritoes, in complete seclusion and the only outside interference that had tampered the islands were the occasional raids by the sea pirates from Malaya. The beliefs about the occasional exchanges of commodities and ideas of the pirates with the Andamanese and the trade of the Andamanese for being sold as slaves in the courts of Siam and Cambodia are still now questions of doubt. However, it was only at the end of the 18th century, with the attempt of the formation of settlements and later on, of the penal settlement, that there began an influx of foreign peoples, mainly from the different parts of the mainland of India. With the formation of the penal colony, convicts were brought over to the islands in numbers and also a few attempts of free colonisation by some people from Burma and India were made. The convicts who were from the different parts of India and the free colonizers who were diverse enough in their social and cultural traits gave a character of heterogeneity to the islands. It was only after the attainment of the independence that the settlement of the East Bengal refugees and of some people from South India is taking place in the Andamans. This is going to add further to the cultural diversity of the islands. This scheme of colonisation of the East Bengal refugees and of some people from South India is the first attempt of some importance for the permanent colonization in the islands.

Such a variety in the types of people, can be broadly divided into three groups.

- (a) The aboriginal population.
- (b) The Later Settlers, and
- (c) The New Settlers.

The aboriginal population belongs to the negrito stock and therefore, has an affinity with the Semangs and Sakais of Malaya, the Veddas of Ceylon and the other negrito groups of Southeast Asia. Some attribute the origin of these aborigines to the settlement of some Portuguese negro slaves who had survived by coming to these islands after a ship-

wreck. However, this idea is totally untenable. On the other hand there are sufficient grounds to believe that these aborigines came down from the lower region of Burma. On their arrival at the islands, they moved to the different parts of the islands and very likely, because of the different types of physical environment they developed different traits and as such a few groups of the population are discernible. They are the

- (a) The Jarawas,
- (b) " Onges,
- (c) " Andamanese, and
- (d) " Sentinelese.

All these groups, though physically akin to each other, have developed different social and economic traits and the ways of earning their food and constructing their shelters are conditioned by their immediate environment. These aborigines who had spread over the different parts of the Great Andamans are experiencing a gradual shrinkage in their areas of command because of the gradual expansion of the areas of the new settlers. The Jarawas are to-day confined to the western part of the South and Middle Andaman, the Andamanese, who are extremely limited in number are along the coastal areas, the Onges in the Little Andaman and Rutland Is, and the Sentinelese in the Sentinel islands. The relation of aborigines with the foreign people became one of deep distrust and hostility with some of the groups, especially the Jarawas and the Sentinelese, which has been very rightly explained by M. V. Portman as an outcome of the unfriendly attitude of the foreigners. The Onges and the Andamanese have however become very friendly with the foreigners. The number of the aboriginal population of the Andamans, is undoubtedly a matter of considerable speculation and it is more so in the case of the Jarawas and the Sentinelese whereas, for the Onges and the Andamanese the estimate is fairly correct.

The aboriginal population of the Andamans is fast declining in number and there is apprehension that inspite of the best of attempts, the chances of the survival of the aborigines for long ages are extremely limited. Undoubtedly, the aboriginal population of the Andamans is an object of interesting study. Such an interest grows out of its being the only purest negrito group in the world and the modes of their life depict very well the nature of symbiotic relationship existing between man and environment. Such a primitive economy of hunting and collecting has not changed appreciably inspite of the impact with the foreigners except imbibing some foreign vices,

The formation of the penal colony in the islands brought in a number of convicts from time to time to serve death sentence or life sentence because of the political or criminal offence and majority of the convicts had ultimately settled in the islands and at present they have got mixed up irrespective of the caste, creed and religion with a fair degree of homogeneity. They are known as Andaman Indians. Besides these Andaman Indians, the groups of Karens and Burmans constitute a very small percentage of the Burmese population in the islands who foster their indigenous traditions. The need for land for the rehabilitation of the refugees in India due to the partition has made room for the settlement of some refugees in the islands. As the settlement programme of these refugees and also of some people from South India demanded the search for suitable land for colonization of the people, a number of delegations had explored the possibilities. The islands with the extreme smallness in size can hardly make room for the lakhs of refugees but the limited settlement that has been established has definitely provided some of the unfortunates with a small plot of land to live on. This idea of colonization is unique in the settlement history of the islands as we do not find in the earlier periods such an attempt for permanent colonization except by some people from Burma. So long, the permanent settlements grew out of the settlement of the free convicts and in most cases under compulsion. The settlement of the later settlers was so long confined within the South Andaman only and especially around Port Blair. But this colonization scheme which has started operating since March, 1949 is throwing open the different parts of the islands for permanent settlement.

As the aboriginal population and the later settlers are the determinants of the dynamism of the islands, three separate chapters are added. The first chapter is devoted to the study of the aboriginal population and the other ones, to that of the later settlers and new settlers.

CHAPTER IX

ABORIGINAL POPULATION

As said earlier, the aboriginal population of the Andamans belong to the negrito group which is spread over the different parts of South-east Asia e.g. the Semangs and Sakais of Malaya, the Veddas of Ceylon, the Tapiro of New Guinea etc. The pygmies of the Equatorial Africa also show very close resemblance to the negritos in physical as well as cultural characteristics but the latter are taller, much more dark skinned and also hairy than the former. In spite of the racial affinity with the other negrito groups of Southeast Asia, the Andamanese show a remarkable degree of purity, an outcome of the virtual seclusion and little contact with the other people. But the infiltration of the later settlers have proved a long way to bring about some changes in them. The comparison of the Andamanese with the other negritos will prove that a good deal of evolution of the Andamanese has been attained by them independently.

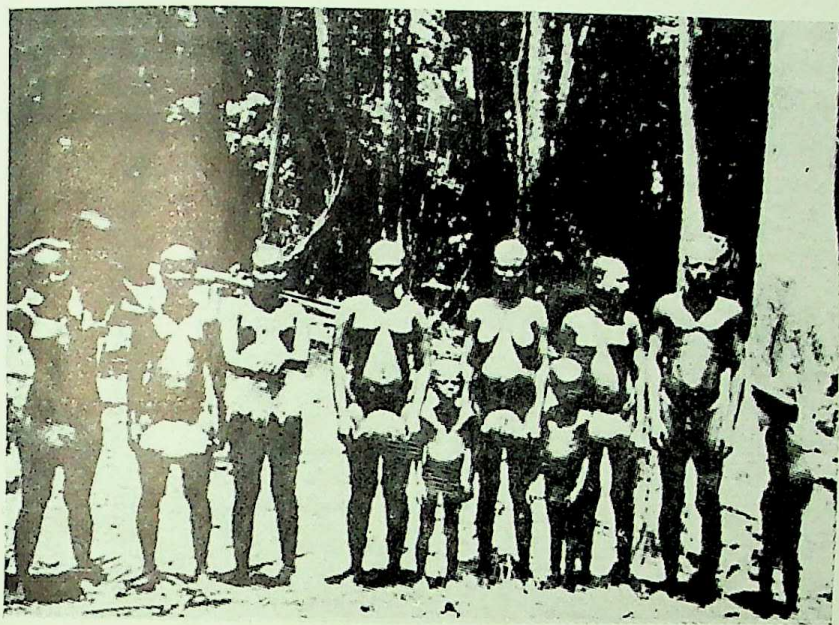
Affinity with the other Negritos of Southeast Asia

Though the fundamentals of the economy of the Andamanese do not differ appreciably from the Semangs and the other groups, some characteristic features distinguish these people from the others. The Andamanese follows a long series of food privations which is absent among the Semangs and the equipments are also more elaborate than the other negritos. The outrigger canoes of the Andamanese are more improved, the bows are of complicated S-form and the huts are considerable improvements of the rudimentary temporary camps original to the negritos. These indicate a definite improvement of the material culture of the Andamanese over the others.

The affinity of the Andamanese with the other negrito groups i.e. the Semangs of the Malaya Peninsula and the Aetas of the Philippines can very well be traced from the study of the equipments of material culture and also from the general habits and the methods of life.

As regards the equipments, the bow, the arrow, the mode of erecting shelter and its shape show further improvements in their construction though the prevalence of the original simple types can be detected in some parts. The original one curvature bow has considerably evolved and has developed into the S-shaped bow in the Andamans though the

CHAPTER IX
ABORIGINAL POPULATION
A group of Onges



A group of Andamanese (Courtesy A. S. I.)

original type can still be found in the Little Andaman. The similarity of the arrows are also striking and this has been rightly observed by Dr. Cipriani,¹ 'Similarity also with the arrows. This consists of a barbed detachable head connected to the shaft by a string. The harpoon arrow like its near relative and probable forefather, the harpoon spears, offers an interesting question in ethnography. Although the Andamans are widely separated from Malaya and Malaya from the Philippines, the three groups of negritoes have harpoon arrows, while such weapons do not seem to be present in other regions of Asia.' The huts of the Andamanese are also the outcome of further improvements over the original negrito shelter found among the other negrito groups.

In the general habits and the modes of living, a good deal of similarity if not identity is maintained with the other negritoes. But changes and modifications have crept up among the different groups in response to the different environments. Some of the original habits have been totally forgotten and some equipments have been further improved upon or in some cases, totally forgotten. The Jarawas, who are believed to have arrived in the Great Andamans from the South had the knowledge of construction and use of the canoes which served as the means of their movement from the south to the north, have totally forgotten both the construction and use of it.

Though the changes brought about among the Andamanese in response to the environment and time is in no way inconsiderable to give them an impress of individuality, little room for doubt is left that they belong to the big family of the negritoes whose remnants are only found to-day scattered over the different parts of southeast Asia.

Origin of the Andamanese

The presence of such a small group of negritoes in the deep solitude of physical separation from the other countries obviously arouses the question as to how and wherefrom they came. The attributes of the Andamanese, prove very well their affinity with the negrito groups. Much to the curiosity of the observers, the tribal people of the Nicobar Islands do not show any affinity with the Andamanese culturally or materially and such contrasts are important aspects of anthropological study. However, the distribution of the negrito group in these isolated islands have been explained by some as the passage of the people from the Lower reaches of Burma and it is accepted with greater unanimity be-

¹ Cipriani, L.—On the origin of the Andamanese, Andaman & Nicobar Islands, Census of India, 1961.

cause of reasonable grounds. In this search for the origin, some one has gone so far as to advocate a shipwreck of Portuguese Negro slaves whose survivors ultimately became the Andamanese. A number of theories about the origin of the Andamanese have been put forward by the different authorities.

The idea of the shipwreck and the survival of the Portuguese Negro slaves can be discarded forthwith. The negroes of Africa, though physically very much akin to the Andamanese, present appreciable differences and secondly the date of arrival of the Portuguese in the Indian Ocean was 'only after the circumnavigation of the Cape of Good Hope, this would mean their coming sometime after the 15th Century, allowing not more than 500 years for the existence of the supposed shipwreck in the Andaman islands. The objections are 'great differences physically and materially from the people of Africa. Kitchen middens date back to milleniums i.e. long before the arrival of the Portuguese anywhere in Asia.'

One of the very good clues for ascertaining the date of arrival of the Andamanese has been pointed out by Dr. Cipriani and he has conducted such a study in some parts of the Little Andaman and the Great Andamans. It is the study of the kitchen middens, that is, the accumulations of refuse, mostly of kitchen. Kitchen middens are fairly widespread and they are obviously the relics of a group of persons living in one spot. The kitchen middens, as they constitute the refuse of a group of persons, consist mostly of empty shells, nearly all bivalve, thrown after the contents have been eaten. The age of the kitchen midden can be calculated by counting the number of shells and the number that can be eaten by a person in one day. Cipriani writes that, 'Considering how many shells can be eaten everyday by one person and estimating the number of persons, that through the ages constituted to the formation of the deposit, it is possible to calculate the age of the kitchen middens. After the studies carried on the Onges we may say that every kitchen midden is formed as a result of the activities of a small group of some 30 to 40 persons who may frequent the spot for 40 to 50 days in a year. Their food is rarely formed of molluscs, they resort to these only when there is nothing to eat. In this way many of the Andamanese accumulations, often huge, required a long period for their formation, a period to be calculated in thousands of years. Even if we reduce this number to half, the resulting antiquity

1 Cipriani, L.—On the origin of the Andamanese, etc.

is not in accordance with the opinion that the Andamanese are descendants of shipwrecked Portuguese Negro slaves.' Though this process seems to be very crude for the determination of the exact date of the arrival of the Andamanese, a rough guess can very well be made. Cipriani has also advocated the measurement of the residual radioactivity of charcoal at different levels for the determination of the antiquity of the Andamanese. It is quite obvious that further research in these lines in the future can only give us a more precise idea about the date of the arrival of the aborigines.

The region wherefrom the aborigines arrived and the route of their migration are also matters of considerable controversy. It is believed that the Andaman and Nicobar islands were connected by land with the Arakan folds of Burma in the late Tertiary period, but this is also not very certain. According to Brown, the authority on the anthropology of the Andamans, the negritos migrated from the Arakan region of Burma if there had been any land connection and if not, they migrated, not by land, but by sea from the Burmese coast (Pegu or Arakan). Brown says, 'The N. E. Monsoon could drift them thence on to the Andamans. It is conceivable that they might have travelled from Sumatra by the way of the Nicobars but the N. E. Monsoon would have appeased their progress in this direction while the S. W. Monsoon would have driven them to the coast of the Andamans. It is hardly possible to imagine them coming from the Malaya Peninsula across the wide stretch of the Andaman Sea. The balance of possibility is in favour of the view that the Andamans were peopled either by land or by sea, from the region of the Lower Burma.'¹ It is probable that the negritos moved from Burma either at a time when a direct land connection was achieved or when shallow waters in the sea facilitated movement by the rafts of the aborigines, but the former has been considered to be thoroughly untenable because of the absence of any mammalia in the Andamans and this proves that if at all there had been any land connection of Burma and Andamans, it must have been before the evolution of the mammalia. The deep sea researches of Molengraaf (1921) have been utilised by Kaudern (1939)² to interpret the probable routes of migration of the negritos into the Andaman Islands. In the Quaternary period, there had been alternating glacial and interglacial periods because of the

¹ Brown, A. R.—The Andaman Islands.

² Kaudern, W.—Notes on the geographical distribution of the pygmies and their possible afflicties; *Etno. Stud. g.* 1939.

change of the climate. In the glacial period, there had been a fall in the level of the sea because of the fact that a great volume of water of the sea had transformed into ice. Hence in one such glacial period, as believed by Kaudern, there was a fall of 300 metres in the sea-level which established a direct contact with Burma facilitating the movement of the negritoës into the islands. But the absence of the Negrito group in the Nicobar Islands, only about 100 miles off the Andamans, invokes inquiry. This conspicuous absence of the negritoës in the Nicobars has been explained by Kaudern in this way:

'If the pygmies, when they migrated from the continent towards the south, were able to reach the former (the Andamans) but not the latter islands (the Nicobars), it meant that there has been at some time a fall of sea level of nearly 300 metres, but not as much as 800 metres in these tracts.¹ As the Ten Degree channel exists between the Andamans and the Nicobars, the movement of the Negritoës further south was stopped.

There has been an attempt of linking up some of the tales of Hindu Mythology, Ramayana with the land and people of the Andamans. Detection of such a link has been speculated in search of the origin of the aboriginal population. Though there is no room for doubt of the affinity of the aborigines of the Andamans with the negritoës, as established from the studies of the physical and cultural anthropology, Shri S. K. Gupta, though not an anthropologist, has been a strong advocate of the opinion that the aborigines of the Andamans are the 'kiratas' of Ramayana. He writes, 'According to modern anthropology they are of the negrito stock. But according to Ramayana they are kiratas. These kiratas have been described in our literature as shiny black, with a copper coloured head of hair (Tamramurdhaja), bulging eyes, strong teeth. The description recorded several thousands years ago, holds good to-day. All these tribes have copper coloured curly short hair growing as it were in separate insulated tufts.'² Further knowledge about them is that they live on meat and fish.

The affinity of the Andamanese has been further confirmed by citing some native appellations of the Andamanese which show a striking phonetical similarity to those of the kiratas e.g., *Aka-kora (da)*, *Aka-kede (da)*, *Aka-kol (da)* etc and also the phonetical similarity of the Onge word *Boan* with Santal word *Bonga* both signifying God.

¹ Kaudern, W—Notes on the geographical distribution of the pygmies etc, *Ethno. Stud.* 9, 1939.

² Gupta, S. K—Andaman & Nicobar Islands, 1951.

Sri Gupta, in conclusion, has been tempted to emphasise with firm conviction that the Andamanese are, therefore, very probably a remnant of the dwellers on the marshes of Bengal and the uplands of Santhal Paragana or the dense forests of Burma and Malaya.

As regards the native appellations and phonetic similarity, such apparent similarity is possibly evidenced in many groups separated from each other by long distances. Similarly, the diet of raw meat and fish is and was common to all hunting and collecting tribes of the world. Independent evolution of many tribes has been akin to each other and therefore, the further geological studies and studies in anthropology can only confirm the idea.

Since the arrival of the Andamanese in the islands, a gradual separation has taken place among the different branches of population who had moved to different parts of the islands. The micro-environment has exerted considerable influence in moulding these people ultimately giving birth to a number of sub-groups. However, the broad generalisations are their hunting and collecting economy, complete ignorance about the domestication of the plants and the animals, except the Onges who have learnt only for the last 30 years the domestication of dogs. Family is the smallest social unit and a few families constitute the communal hut. Each tribal sub-group has its hunting territory, within which it maintains a more or less nomadic life till they return to the main settlement where they have a communal hut.

The doctrine of the environmental determinism exemplifies itself in the adaptation of the aborigines to the local environment. In their life, they never look beyond their local geography and the materials for houses, the food, the ornaments and every thing that they are in need of, are collected from the small territory in which a community lives. So the obvious conclusion may be drawn that the coastal tribes are dependent on fishing, turtle hunting and gathering of shells and oysters and the interior tribes on hunting. This type of primitive economy, based on hunting and collecting, cannot support more than two to four persons per square mile as against more than 300 per square mile in agricultural lands and again the density varies to a great extent according to the type of agriculture practised e.g., rice-growing regions support the maximum density of population. In spite of their all-round self-sufficiency they have some connections with the later settlers. For the want of iron, tobacco, distilled liquor, opium etc., these aborigines (jarawas) either make periodic raids on the settlements (Onges and Andamanese) or have established friendly relations with the settlers. The necessity

of all these things, locally not available, was felt by the aborigines only due to their slight contact with the later settlers.

However, a broad two-fold division of the aboriginal population can be made.

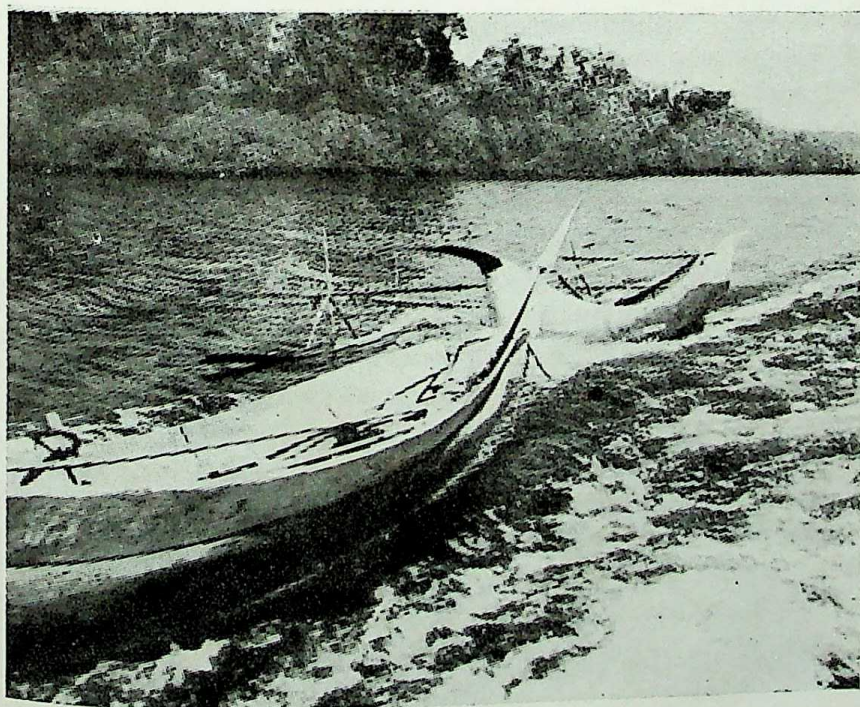
1. Aborigines of the Great Andaman Group—All the aborigines of the Great Andamans with the exception of the Jarawas, the most hostile aborigines living in the southwestern part of the Andamans.
2. Aborigines of the Little Andaman Group—the Onges of the Little Andaman, the Jarawas of the South Andaman & the Sentinelese of the North Sentinel island.

As to how these two groups came into being and their areas of distribution, various theories have been put forward. Long after the attainment of the individual traits of these two groups, a continuous northward movement of the aborigines from the Little Andaman was in vogue and one such party had arrived in the Great Andamans who have been lately known as the Jarawas, who were all along subjected to pressure of the local natives belonging to the Great Andaman Group, the *Aka bea* of South Andaman. The very development of the hostility of the Jarawas and their complete seclusion from the other aboriginal groups owe to their being continuously subjected to the adversities. B. V. Eickstedt¹ has been of the opinion that the aborigines of the Andamans entered into the Great Andamans in two groups—the earlier group comprises the Onge, Jarawas and the Sentinelese while to the later group belong the ancestors of the Great Andaman Group. The passage of the Great Andaman Group has led to a constant southward push of the earlier group which has ultimately led to their habitation in the islands of the south i.e., the Little Andaman, Rutland Island and a part of the South Andaman. Cipriani has been emphatic enough in justifying the views of Brown that the Jarawas reached the Great Andamans from the south. Though they are supposed to have come from the Great Andamans by canoes, the art of constructing canoes and of using them have been completely forgotten and Cipriani believes that such instances of the loss of knowledge of the construction of canoes and their uses are many. A list of the names of the camps, given by Cipriani in the 1951 census, dating back to antiquity and having a good supply of drinking water and of

¹ Eickstedt, B. V.—Die Negrite der Andaman (Autho Ans).

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An outrigger Canoe. (Courtesy A. S. I.)



An outrigger Canoe with a Burmese Boat (Courtesy A. S. I.)

food lie in a chain running from north to south along the islands between Little and Great Andamans. This has been one of the most convincing proofs of the movement of the aborigines from the south to the north. Cipriani writes, 'All these organisations, with geographical names, camps, places for water and food, indicate an ancient navigating experience moving from the south to the north. About a century and half ago the Jarawas are said to have still been in possession of canoes and the same is said of the savage inhabitants of the North Sentinel Island less than 50 years ago. In a surprisingly short period the technique of making canoes seems to have been completely forgotten as a result of the difficulties of using them.'²

THE ABORIGINES OF THE GREAT ANDAMAN GROUP

Andamanese, as they are called, were the most widespread and the largest in number. They had split up ultimately into a few sub-groups from the north to the south. The different groups are *Aka-kora*, *Aka-boa*, *Aka-jeru* and *Aka-bea*. There has been a deplorable decline in the number of these aborigines who in the bygone ages exceeded all other groups in number. At present the number is only 23, a considerable reduction from the number 625 only in the beginning of the 20th century. Though the present importance of the Andamanese because of the extremely poor number is far from significant, they are of no small interest for the study of the anthropologist, especially the impact of these people with the later settlers.

The consequences of the impact of the outsiders on the Andamanese have been far from satisfactory. With the formation of the penal colony, the aborigines continued to develop feud and on the 14th of May, 1959 a clash between the aborigines and the Govt. occurred which is known as the Battle of Aberdeen. Aberdeen is at the heart of the town of Port Blair. Efforts of pacifying these aborigines were made and for bringing them into closer terms of amity, the 'Andamanese Home' was started in 1863 by Rev. H. Corbyn Chaplain. They were employed for working with the convicts taught to speak English and wear clothes. The consequence of such an impact has been alarmingly devastating because of the infiltration of a number of vices and diseases which only paved the way for their impoverishment and decay (For further particulars see demographic characteristics).

² Cipriani, L — On the origin of the Andamanese, Andaman & Nicobar Islands, Census of India, 1951.

For the fact that the Andamanese inhabits the coastal areas of the Andamans, the fishing is an well-known art to them. The pristine culture is virtually lost and the few who are still now surviving have been brought under the folds of government help. Still now the headmen of the Andamanese in the Middle Andaman, *Loka* is found doing turtle hunting in their canoes and climbing up the coconut trees without the help of any rope. Still now they are found dancing in groups but they are few and far between. All of them wear clothes and live in the huts made by the Forest Department.

THE ABORIGINES OF THE LITTLE ANDAMAN GROUP.

The Onges, the Jarawas and the Sentinelese belong to this group.

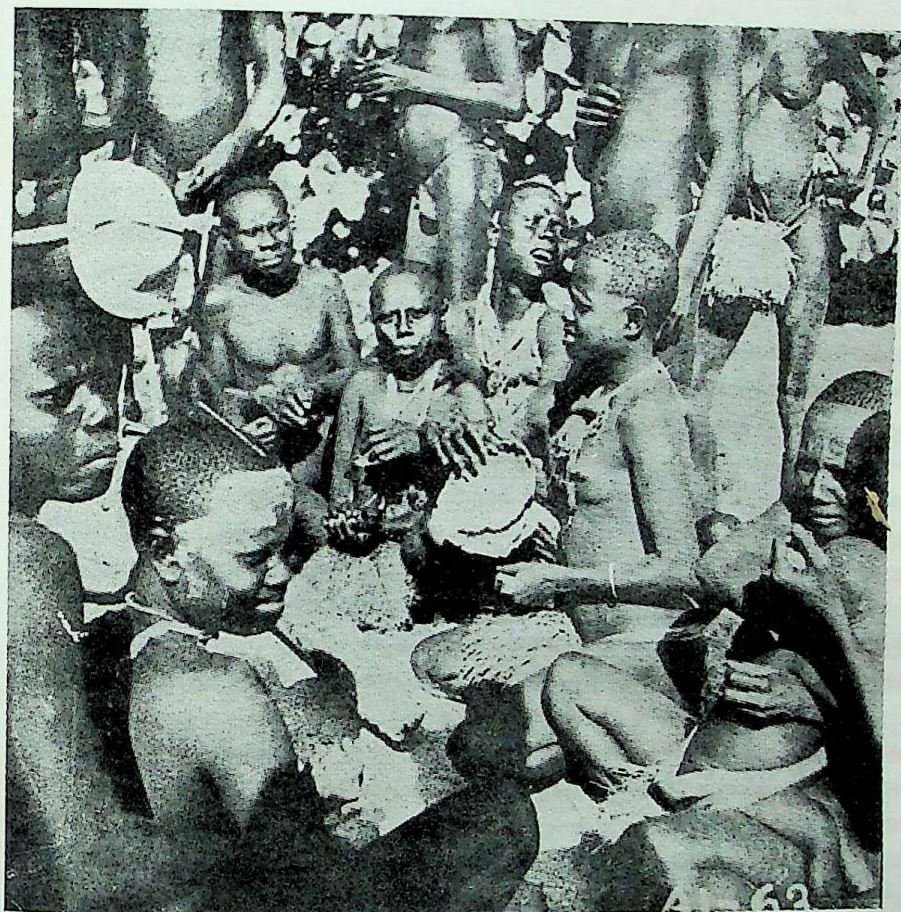
The Jarawas

Of all these three groups, the Jarawas only live in the Great Andamans and their occurrence in the Great Andamans has been explained by many authorities, as has been explained earlier. The Jarawas are implacably hostile and the best of efforts to bring them under terms of amity have proved futile. Lt. Colebrook and Archibald Blair first came in contact with the Jarawas and in course of time, the Aka-beas, belonging to the Great Andaman Group, living in the South Andaman became friendly with the foreigners while the hostility of the Jarawas remained unabated. The Jarawa hostility has been always increasing and it was more so since 1921. In 1923, 37 Jarawas were shot and in 1938, a Jarawa woman and her 4 children were captured. So the chances of meeting the Jarawas have been few and far between and the great decline in their number has in all practical senses stopped the apprehension of their raids in the new settlement areas. Still now, of course a person penetrating deep into the forests of the eastern parts of South Andaman should always be on the guard against an attack from the Jarawas.

The Onges.

The Onges, having experienced the impact of the foreigners at the latest period, are at present the most widespread of all the aborigines of the Andamans. They do not have the truculence of the Jarawas and the attempts for bringing them under closer ties and terms of amity with the foreigners have proved successful, though the essential traits of their social, cultural and material life remain unaltered.

CHAPTER IX
ABORIGINAL POPULATION



Communal dinner of the Onges (Courtesy A. S. I.)

The contact of the Onges with the outsiders can only be traced since the efforts of M. V. Portman¹ to establish a friendly relation with these tribes from 1886 onwards. However the earlier contacts with the Chinese and Japanese were possible because these people used to frequent the shores of Little Andaman for collecting the valuable shells and the Onges used to be engaged by them as divers and in reciprocation they were given presents of alcohol and opium. In the initial stage of the attempt for establishing a friendly relation by Portman, the Onges proved themselves hostile which was evidenced from the poor fate of the crews of a ship 'Assam Valley' when it touched the shores of Little Andaman and it was through the great efforts of the punitive expedition led by W. L. Much that the dead bodies of the crews were recovered. Later on, a few Onges, all on a sudden, arrived at Cinque Island and were captured by M. V. Portman. Only 9 of them were detained and the rest 15 were released. These few captured Onges were closely observed and studied in Port Blair by Portman and were ultimately returned back to their native land, Little Andaman. The friendly treatment and the presents that these Onges had received from Portman, paved the path of establishing friendly relations with the Onges much easier and also made the subsequent visits of the foreigners much more welcome. After Portman, a few more contacts were made with the Onges by Prof. Lapicque in March, 1893, during the operations of 1911 and 1921, undertaken by Eicsktedt, a German anthropologist, in 1827, by Dr. B. S. Guha, Ex-Director Anthropological Survey of India in 1948 and by Lidio Cipriani, an Italian anthropologist in the year 1954 and in a few succeeding years. Still the knowledge about the Onges seems to be meagre.

Living exclusively in the Little Andaman and a few of them in the Rutland Island, the Onges live in groups on a septal basis with clear-cut boundaries of hunting group for each group. There is no permanent habitation or village of the Onges in any part of the Little Andaman and their huts are of two types—(a) the permanent type of communal hut called *bera*, and (b) the temporary type of shelter called *korale*.

The abundance of food and water has made the life of the Onges comparatively easy-going. All the groups are headed by a leader and each group is assigned a fixed territory. The community life seems to be extremely democratic in character which entertains and also maintains a perfect individual freedom and only in times of necessity, advice.

¹ Portman, M. V.—History of one relations with the Andamanese.

rather than order is given by the leader. Cipriani observes.¹ "For instance, it is very amusing for them to think that a man gives orders to others. This means that they have no real chiefs. A so-called Onge chief, or raja, is only the head of a group of families living in the same communal hut, and giving not orders but only advice. It is the most experienced man who is considered chief in the hut, but his authority if at all never goes beyond that hut. In other words no real chief exists in the Little Andaman. Notwithstanding this, there is a perfect order in the island, because nobody interferes with the work or encroches upon what can be considered the rights of others."

As is common to most of the aborigines, the Onges are generally not very receptive when the questions about their numbers and other groups are enquired. The headman says that there are many many fifty Onges. However the number of the Onges are approximately 600.

As regards the mode of living of the Onges, the hunting and collecting are the basis of their economy. The domestication of the plants i.e. art of agriculture is not known to them and it is only 30 years back, the dogs arrived in the island and have been domesticated by the Onges for chasing the pigs, their main prey. In the absence of agriculture, the natural products of the sea and the forest provide them with all their items of diet. Animal and vegetable products and honey are the main items of their diet and there has been, so far, no introduction of salt in their diet. The most important victims of their hunting are pigs and turtles, the former is chased by dogs and are killed with great cruelty. The cooking of the fish, meat, roots, tubers, jackfruits etc are done by putting them under fire. Preservation of foodstuffs is not widely practised except the jackfruit seeds which are tied up in a small net inside water on the bank of some stream and taken out during rainy season, when the other vegetable foodstuffs are not available. On the whole, the Onges have a very balanced diet with a fair richness of all the nutrients. In this connection the observations of Dr. Cipriani during his survey in the Little Andaman throws considerable light in their conditions of life. He has estimated the Onges as one of the happiest people of the world, who in spite of their primitive economy, are not the miserable victims of poor health, ill nutrition and oddities of life.

Some amount of artistry and craftsmanship have developed among these people. A canoe can be constructed by a man, all by himself from

¹ Cipriani, L.—Survey of Little Andaman during 1954; Bui. Dept. Anth.,

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Painted faces of the Onges (Courtesy A.S.I.)



Preparation of a tussel by an Onges Woman (Courtesy A.S.I.)



Construction of the hut by an Onges (Courtesy A.S.I.)

the felling of the tree, chiselling the lumber and processing it further to give the shape of a canoe. Buckets of wood are also constructed by them from the softwood tree. Two types of baskets are made, the smaller ones are more well-finished than the bigger ones. The former is known as *toleoaga* and the later *tole-laya*. Such activities have introduced the use of dahs, chisels, and iron files among the Onges, from the iron pieces derived from the sea shores. The other important pieces of their craftsmanship are the beautiful weavings of fibre, tussel of yellow fibre used by the women in their front. However, the art of making the earthen pots has been completely forgotten.

The leisure in their lives has helped the development of some amount of aesthetic senses among the Onges. All the Onges men and women shave their heads with flakes of glass, obtained from the sea-borne glass bottles. The body of the Onges are also painted with white clay which save their skin from insect-bite while red paint serves medicinal purposes if some individual is having fever. In times of mourning, red ochre paint is a taboo.¹

Early marriage is the custom. The widows are looked down upon by the society. Some incidents of widow murder and drowning are heard. In the married life, the husband is devoted to his wife and both the husband and wife work for collecting their food.

Dances and songs are in vogue and there are practically songs for every occasion and activity. Most of their songs are more plaintive than joyous.

There are three broad divisions of the Onges of the Little Andaman :

- (1) *Giremeka-Gobeule* group inhabiting the northeastern coast of the island ;
- (2) *Engakwale* group live in the interior of the islands ; and
- (3) *Gireraragobeule* group live in the southern and western coasts of the islands.

In spite of all the limitations, the Onges have been considered as one of the happiest people of the world with plenty of food and water to eat and drink and with very few social cankers to fight with. But as is common to all other aborigines of the Andamans, a decline in their number is discernible.

The Sentinelese

The Sentinelese are the least known of all the aborigines of the Anda-

¹ The Onga of the Little Andaman—A short guide book ; Anthropological Gallery, Indian Museum, Calcutta.

mans. They live in the North Sentinel island and Portman had only made a few observations in the abandoned settlement of these aborigines. In 1886, Portman contacted a few Sentinelese with the help of a few Onges. The affinity of the Sentinelese with the Onges have been detected but the language of the Sentinelese is different from the Onges. However, only later researches can reveal more facts about their lives.

PRESENT DAY DISTRIBUTION OF THE ABORIGINAL POPULATION

The islands, though remained essentially a land of the aborigines, have a present day distribution which is very much discrete in nature. The nature of the distribution was very likely much more widespread in different parts of the islands but the great decline in their number coupled with gradual expansion of the area of the later settlers led to a continued recession of the aborigines in the more desolate areas. Thus there has been a great shrinkage in the territory of the aborigines of the South Andaman where no settlements of any importance had developed.

There are only a few Andamanese (23) who are still now surviving in the Middle and North Andamans and they live in the huts built up by the Forest Department.

The exact areas of inhabitation of the Jarawas are anybody's guess. Though the Jarawas have suffered a considerable decline in their number, no evidences of their distribution beyond the South Andaman are in view. Living under the cold patronage and hostility of the neighbours, the *Aka-beas*, a sub-group of the Andamanese, the Jarawas were always subjected to all their efforts of territorial expansion. Though their exact areas of distribution have not been traced so far, it is probable that they live in the dense forests of the South Andaman, especially in the least disturbed and unhaunted forest areas of the west. However, their biggest concentration is believed to be between Port Constance, Port Meadows and Shaol Bay.

The Sentinelese inhabit the North Sentinel Island and only further exploration in the island can furnish an idea about their exact spots of distribution.

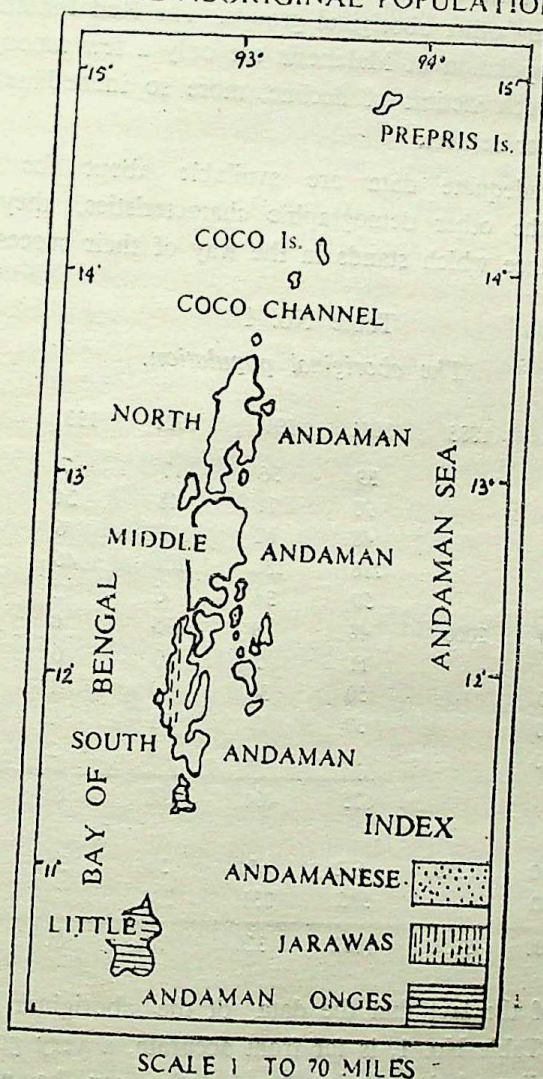
The most predominant in number are the Onges who inhabit the island of Little Andaman. However they make occasional voyages to the Rutland and Cinque Island where some of them live. The areas of distribution of the Onges in Little Andaman are mainly in the coastal areas of the northeast, south and west and also in the interior.

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This speaks very well how in some isolated spots of the islands a remnant of the widespread negrito of the past stand on the verge of imminent decay.

AREAS OF DISTRIBUTION OF THE ABORIGINAL POPULATION



DEMOGRAPHIC SET UP

A group of aborigines with their pristine culture in these isolated islands are sharing the same fate with many other aboriginal population of the world, of a considerable decline and impoverishment. It is be-

yond doubt that the impact of the people having better material culture on the aboriginal population has resulted in an acceleration of their decay. The aborigines of the Great Andaman Group are the first people in the islands to come in contact with the later settlers and the early incorporation of many of the vices of these new comers have resulted in the furtherance of their decay. Such devastating effects are also observed in the case of many other aboriginal groups. The Red Indians of U.S.A. and the native population of Malanesia are only a few among the many others who are such victims of decline, more so immediately after the impact of the later settlers.

Whatever inadequate data are available about the number of aborigines and the other demographic characteristics, they show the nature of imbalance which stands in the way of their successful growth.

Table No. 1*
The aboriginal population.

Tribe	1858	1885	1901	1911	1921	1931	1941	1951
	100		39	36	17	7		
Karo	500		96	71	48	24		
Tabo	200		48	62	18	6		
Yeve	700		218	180	101	46		
Kede	500		59	34	6	2		
Juwai	300	2000	48	9	5	0		23
Koj	100		11	2	0	0		
Bojigyab	300		50	36	9	1		
Bea	500		37	19	1	0		
Belawa	300		19	15	4	2		
			625	464	209	88		23
Onge	700	1250	672	631	346	350		600
Jarawa	600		585	231	231	170		350
	4800	3250	1882	1326	786	608		973

In spite of the fact that the data of the aboriginal population, as given in the Table No. 1, is far from accurate, a very good idea of the nature of decline of the aboriginal population can be assessed. As is evident from the Table, the population of 4800 in 1858 has reduced to 608 in 1931 in less than 75 years.

* The figures are not at all accurate.

The Andamanese are almost non-existent and at present only 23 are surviving. Sri Shivdasani writes,¹ "I met only 20 of them in the camp at Long Island and was surprised to see that the youngest child there was about 9 years old, possibly a half breed". This goes a long way to prove the extremely poor fertility of the Andamanese. This has been further substantiated by Dr. Sarkar on analysis of the reproductive capacities of 100 aboriginal women of the Andamans from the original data collected by Portman.

Table No. 2
Reproductive lives of the Andamanese Women.

	North Andamanese	South Andamanese
No. of women	50	50
Less married	4	1
	<hr/> 46	<hr/> 49
Unproductive marriages	21	17
	<hr/> 25	<hr/> 32
Average children per mother	2.86	2.81
Average living children per mother	0.92	0.38
Sex-ratio	39m:20f	52m:38f
Net reproductive index	0.36	0.16

Source. Sarkar, S. S.—The origin and migration of the Negritoës in the Andaman Islands, *Man in India*, Vol. 33, No. 4, Oct-Dec, 1953.

As is evident from the above table, of the 100 women, 38 had unproductive marriages and 5 remained unmarried. The case of 43 women out of 100 can easily be set apart because of their unproductivity. This high percentage of unproductivity is really an alarming factor and the average number of children per mother is 2.83 but the average number of living children per mother is less. This ultimately results in a decline in the population number.

The Jarawa population, according to the 1951 census, is estimated in between 300 and 400. Further details about their demographic characteristics are not available.

¹ Shivdasani, H. R. Report of the possibilities of colonisation and development of the Andaman & Nicobar Islands, 1949.

The Onge population has been estimated by various authorities and the surveys of Dr. Cipriani have brought to light some important characteristics of the Onge population. Cipriani has ascertained the total Onge population to be 607, of which 229 are adult males, 241 are adult women and 137 children. Of the 137 children, he has detected 48 boys and 62 girls and about the rest he is not sure. However, the procedure followed by Cipriani and the conclusions derived by him, which are contrary to the previous knowledge, have been vehemently criticised by Dr. Sarkar.¹ Sarkar opines that the procedure of enumeration by counting the number of sleeping places in a communal hut is liable to gross errors because of the roving nature of the Onges of whom an appreciable number has no sleeping place. The determination of the sex-ratio from the communal huts are also more difficult. As a matter of fact the precision of enumeration, as is apparent from the census of Cipriani, cannot be attained and the deficiencies in the procedure of Cipriani have very well been brought to light by questioning and ultimate rejection by arguments. He writes that, 'His (Cipriani's) account is difficult to follow. There are very few relevant data regarding the actual Onge population. He has estimated the population instead of giving a simple population figure for each of the Onge settlements he visited. His estimates are based on the number of sleeping places in a hut, though nothing definite could be found either with regard to the total number of communal huts or the sleeping places. Then to find out the sex of the individuals from the sleeping places seems preposterous. Cipriani (1956) estimates the total Onge population to be 607, comprising 229 adult males, 241 adult women and 137 children. He was able to determine the sex of the children in about 80% of the cases, since immediately after the above quotation he states: 'Of the latter 48 are boys, 62 girls and of 27 sex could not be ascertained.' In the same paper and just two sentences before, where he gave the above figures, he mentioned a total of 497 individuals, comprising 242 men and 255 women. If the latter figures are meant only for adults then with the addition of 137 children to the above adult population of 497, the total Onge population appears to be 634. Even then the discrepancies in the adult population remain to be explained; it adds up to 470 (229 males, 241 females) once and to 497 (242 males, 255 females) another time.

Secondly, the enumeration of Cipriani shows a higher feminine population, whereas as analysed by Dr. Sarkar, all the previous estimates

¹ Sarkar, S. S.—*Analecta et Additamenta*, *Anthropos* 55, 1960.

of the Onges actually seen, show a predominance of males. The determination of sex-ratio by Cipriani is no doubt very much speculative in nature and as is evident from the extract of the comment of Dr. Sarkar, Cipriani himself has been contrary to his own versions, at times. All the previous censuses of the actual Onges met and counted show a predominance of males and this happens to be the logical argument of Dr. Sarkar to conclude that the Onges population has been characterised by high masculinity. High masculinity always imply a very high predominance of males over females but never in the previous censuses we find such a high predominance. The census of Cipriani shows a slightly higher number of females than males and the attainment of such a slight predominance of females over males is never a physical impossibility. As such we may believe that there may be a slight predominance of females over males though the procedure adopted by Cipriani is by no means a precise one.

Dr. Sarkar, though apparently justified, totally rejects the procedure of Cipriani. Census of population is in itself a very difficult job and it is always liable to errors even in the advanced countries. Therefore, the enumeration of Dr. Cipriani is highly praiseworthy and because of the difficulties of contacting all the Onges the enumeration of the communal huts and the number of sleeping beds are no doubt very important clues for an intelligent guess about their number.

Though Dr. Sarkar pleads for the predominance of males by taking into account the number of Onges actually seen and counted (which show a predominance of males), the research expeditions undertaken by Sri R. C. Nigam¹ under the auspices of the Anthropological Survey of India in March, 1955 and December, 1956 made him fairly well-acquainted with the island of Little Andaman. From his own actual counting, a higher number of females have been counted than males. He was able to contact 161 Onge individuals of which 138 belonged to the 45 family units and the rest were 'unattached'² individuals i.e., widows, unmarried

1 Nigam, R. C.—Little known tribes of the Andaman Islands—Their problems and prospect; Vanyajati; Vol. VIII, January, 1960, No. 1; Vol. VIII, April, 1960, No. 2 and Vol. VIII, July, 1960, No. 3.

2 A family is considered to be comprised of parents and children whereas, if the father or mother of a family is dead, the members have been called as 'unattached' type by R. C. Nigam.

boys and girls and children of the widows. The break-up of the total population is given below.

Table No 3

	Male	Female
Adult	46	61
Child	30	24
	<hr/> 76	<hr/> 85

On the consideration of the total population, there is a 5.6% excess of the female population over the male population.

However, the further break-up of the total number of Onges counted by Sri Nigam reveals some of the most important demographic characteristics of the Onge population. Considering only the 45 family units, it is found that there is a preponderance of males over the females as is evident from the table below.

Table No 4

No. of families	Individuals			Children		
	Male	Female	Total	Male	Female	Total
45	75	67	138	26	22	48

The Onge of the 'unattached' type, therefore, are comprised of 5 males and 18 females. Of this 10 are widows. So the predominance of the females among the Onges may be due to a higher percentage of widows whereas the widowers are much less in number. This throws another important light on the longevity of the Onge males and females. The females, as it stands, have a longer life than males and this is not only a very important aspect of the Onge population but also of the other tribes of the world. In Africa also such a higher longevity of the females is discernible which is due, as is commonly believed to higher resistive power of the females to fight the odds of life compared to the males.

The fertility of the adult females are also extremely poor. He writes¹ in 'the total of 61 adult females there were 10 widows who were too old for child-bearing, 4 married women with their child-bearing period finished, while there were 8 married women with no possibility of any issue. Thus

¹ Nigam, R. C.—Little known tribes of the Andaman Islands—Their problems & prospects; Vanyajati, Vol. VIII, July, 1960. No. 3.

in the sample of 61 adult females, 22 women were nonfecund. As such the obvious female preponderance in the total sample is not of much value and the total picture of Onge population is rather that of decline only.' Such a decline of the fertility of the Andamanese women has already been pointed out.

Of all the aboriginal population, the Onges are to-day the most widespread and have undoubtedly a very balanced sex-ratio. As regards the fertility, there is a gradual unproductiveness amongst all the aboriginal population. The Andamanese who are on the last legs of the decay, have the youngest child of more than 10 years. Nothing definite can be said about the Jarawas and the Sentinelese but they are also on the verge of their decay.

PROBLEMS OF THE ABORIGINES

Assessment of the socio-economic and cultural problems is always subjective and a true assessment is only possible through the first-hand intimate acquaintance of the aborigines. The aboriginal population of the world to-day present a very gloomy picture of stagnation or decay and the aboriginal population of the Andamans are undoubtedly sharing this dismal fate of decay.

Only after the impact of the people having better material attainments the problems of the aborigines have been aggravated that paved the path of total ruination of their socio-economic traits and also initiated their gradual numerical decay. Such evidences of decay only in the last few centuries are within view in the case of the American Indians which formerly having 268 groups have dwindled to only 67 groups now surviving when the rest have been wiped out. The case of the aboriginal population of Australia, Tasmania, Malanesian Islands and the others of southeast Asia present such a gloomy picture. The causes of such a decline have been attributed to the incorporation of vices and such social poisons as alcohol and opium, attack of venereal diseases, quick adoption of foreign customs and modes of life which have been proved incongenial in their own environmental context and also to the gradual 'loss of interest in life.' This loss of interest in life, according to Rivers¹ takes away from the people the desire to live and to shoulder the burden of life, with the result that mortality incidence goes high and the more obvious causes of mortality like new diseases, the social poisons etc, tend to have greater potency for

¹ Rivers, W. H. R.—Essays on the depopulation of Malanesia (Ed). 1922.

evil and are allowed to work such ravages upon life and health of people whose resistance level has already gone quite low.² Such a loss of interest in life is common to many of the aboriginal population. The aboriginal population of the Andamans have also been victimised to it and only in one century the aborigines of the Great Andaman Group have almost been wiped out and the Jarawas, in spite of their isolation, have been undergoing considerable decay. The Onges are also suffering from stagnation and decay. There has been the addiction to some of the social poisons e.g. tobacco, alcohol, etc.

The causes of decay of the aboriginal population of the Andamans may be summed up as being the followings:

1. Diseases ;
2. Murder of the aborigines by the later settlers, especially the bombardment of the Japanese in the Jarawa infested areas have resulted in a virtual decline of the tribe ;
3. Little productive capacity of the aboriginal women.

The sex-ratio in the case of the Onges is quite balanced and therefore, the sex-ratio is not a factor for the decline of the aboriginal population but very little productive capacity of the aboriginal population is undoubtedly a major factor of their decline and it has already been discussed.

As regards the material life, however satisfied the aboriginal population may be with their poor lot, it is in most primitive form and the only materials that they have in possession are for earning their livelihood. Cultural aspect is also desiccated with a dearth of richness. No evolution has, however, been observed for deriving much more material comforts and the aborigines with their hard struggle for life hardly find any time to develop their thinking which can lead to a betterment of their cultural and material life.

THE FUTURE

These aboriginal population have so far shown little urge for improving their own lot and in the absence of such attempts, the chances of their betterment as well as survival is a far cry. The only means of improving their lot seems to be possible through the efforts of the Government. The attempts for bringing the aborigines in a short period within the folds of an advanced economy and society have proved futile and contrary to it, the attempts of segregating the aboriginal population, as done in the

² Nigam, R. C.—Little known tribes of the Andaman Islands—Their problems & prospects ; Vol. VIII, April, 1960. No. 2.

United States with the idea of giving them a free opportunity of developing their own lot through their own efforts, have also proved equally unsuccessful. How best the lot of the aborigines can be improved remains a great question. Only a careful first hand knowledge may lead to the understanding of their problems. The problems of improving these aborigines can be attained by a two-fold solution—by the development of their material lives and by changing their outlook of life. The ultimate objective is to bring about more of amenities and happiness in their lives and chances were not few when with the attempts for attaining such an objective the consequences have been only painful.

With the inadequate knowledge that has been gathered about the aborigines of the Andamans, an assessment of their problems will be far from satisfactory unless a better knowledge of their language, socio-economic and psychological traits are acquired.

The material life is obviously very poor. Their energy is spent only after the earning of their food. With the hunting and collecting type of economy, the availability of foodstuffs is always scarce and also extremely perilous. The Onges who have been estimated by Cipriani as one of the happiest people on the earth also suffer from a considerable scarcity of foodstuffs during the summer. A few very helpful practical suggestions have been offered by Sri R. C. Nigam for supplementing the shortage of their foodstuffs. This is by introducing agriculture in this region. He has offered two plans.

1. A long term plan and
2. A short term plan.

In the long term plan, he envisages the introduction of a number of plantation crops e.g. cocoanuts, papaya, pandanus and jackfruit. Such a plantation of cocoanuts have been established in the Dugong Creek area of the Little Andaman by the Andaman Administration. Sri Nigam has pointed out 5 other areas where such plantations can be developed in the future and all these 5 spots are sufficiently close to the settlement of the Onges e.g. Togalbng, Cheruger, Entigue in the interior of the island. Otidubara in the south coast and Koname in the west coast of the island. The fruits of the plantations will be available after about 8 years.

The short term plan on the other hand is for implementing immediate improvement of the food conditions which can be achieved by the introduction of Nocobarese yam, sweet potatoes, tapioca and such other tuberous plants all over the island.

These plans seek the introduction of agriculture among these people which can be possible only by imparting a gradual knowledge of tilling and culturing the soils to them.

Simultaneously with it the introduction of some deer in the islands and in course of time, domestication of animals like pigs, goats and poultry farming have been suggested. These are no doubt very helpful suggestions but such a change in their economy can be feasible if there is a gradual urge among these people for changing their own primitive economy. Nigam says that within 15 years such an economy may very well find a footing.

For changing the outlook of these people, attempts should be made gradually for developing an intimate knowledge about them which can only be achieved well by learning their language.

For the prevention & cure of disease medical facilities must be made available and proper steps should be taken so that addiction to the social poison does not increase.

The Jarawas, though show conspicuous signs of decline, are still now of considerable number. The attempts for establishing friendly relations with them have so far proved futile. Presents are given by the Government in their settlements, of course, in their absence, as the direct encounter with them may prove fatal. Nevertheless the means of bringing them closer may be sought in the same way as Portman did in the case of the Onges who were captivated, while stranded, in the island only by chance. If a group of Jarawas could be captivated and given the best of understanding of friendship and amity, this may lead to further understanding of these people.

The little knowledge about the Sentinelese precludes any comment about their future unless attempts for landing in the island and subsequent researches about these aborigines are made.

The future of the Andamanese can hardly be of any consideration as they are the last few (23) of the big decaying family of the Great Andaman Group of aborigines.

CHAPTER X

THE LATER SETTLERS

Since the formation of the penal colony, convicts on political and criminal grounds were brought to the islands and many of them were, however, released and were given the opportunity of going to their original homes and of bringing their family members to the islands for permanent settlement. Very few of the many who had been back home were really welcome by their own family members and therefore, came back alone and some of them got married with the local convict women. The descendants of the convicts are known as local borns or Andaman Indians, who originally belongs to the different parts of India and at present have been moulded into a homogeneous group of people having a strong tie of affinity. The settlements of these people have grown up exclusively in the South Andaman and more correctly only in Port Blair and the neighbouring villages. Besides the Andaman Indians very few people volunteered to settle in the islands except a small group of people in service from the mainland of India and a few other independent groups of people from India and Burma. The few independent settlements that were established in the Andamans always grew up in the immensity of solitude and separation, resulting in the formation of their own independent economy much in tune with their original socio-economic and cultural bias. Never before an attempt of organised permanent settlement in the different parts of the islands was made and only since the independence such attempts have been made for the all round regional development of the islands by throwing opportunities of settlement mainly to the East Bengal refugees and also to some people of south India. As it is evident, for a small group of these islands, the variety of the peoples are extremely great.

The great variety of the later settlers can be classified as follows.

1. The Andaman Indians, the Mapillas and the Bhantus,
 2. The Burmese settlers—Karens and Burmans,
 3. People from the mainland mostly for service with a small community of Anglo-Indians,
 4. Refugees from East Bengal and some people from South India.
- (See the chapter on New Settlers)

Andaman Indians

The Andaman Indians, being the descendants of the convicts belong to all streams of Indian culture brought in, by the settlers coming from all

states. Pathans, Punjabis, Tamils, Telegus, Malayalees, Bengalees and others have merged into a common culture, that is characteristic of itself, united by a common language that is Hindustani in spoken form and Urdu in literary expression. Inter-marriage between the people of different castes and religious takes place as a result of which very little significance is attached to all these institutions. However the common background and the future interest have united them as a homogeneous group of people. With the opening up of the schools and a High School in Port Blair and also facilities of collegiate education at Calcutta and Madras, many of the Andaman Indians are sufficiently well-qualified to meet the demands of the developing islands.

With the donation of self-supporting tickets to the convicts, for permanent settlement in the islands, agriculture and work of unskilled labour formed the main occupation of these people. Roads were constructed and simultaneously with it the development of linear settlement pattern on both the sides of the roads took place. The ex-convicts were compelled to take up agriculture or any other occupation which in majority of the cases, were not in harmony with ancestral occupation. Uniform house types with thatched roofs from the locally available materials were erected and mud walls were avoided as it is unsuitable in the heavy rains. As regards agriculture, rice cultivation was only taken up.

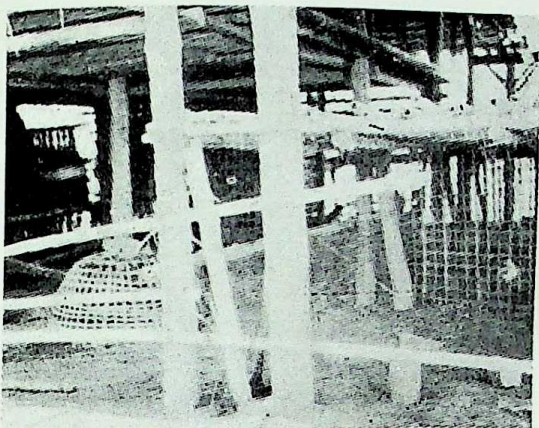
The economic framework of these people experienced a lot of change during the time of Colonel Ferrar (1923-31) when it was attempted to transform convict settlement to a colonial area. A great development of the local trade and in consequence, the local standard of living was possible with the introduction of 5,000 or more talabدارs i.e. wage earning convicts. Livelihood index of the people also changed. In the days of Col. Ferrar agriculture formed the main occupation but the new avenues that were opened up in the Government offices diverted more than 50% of these people to such jobs. Hence the relative importance of agriculture declined at the cost of the government services.

Of the 625 earning heads, the following are the occupational types, according to the 1931 census.

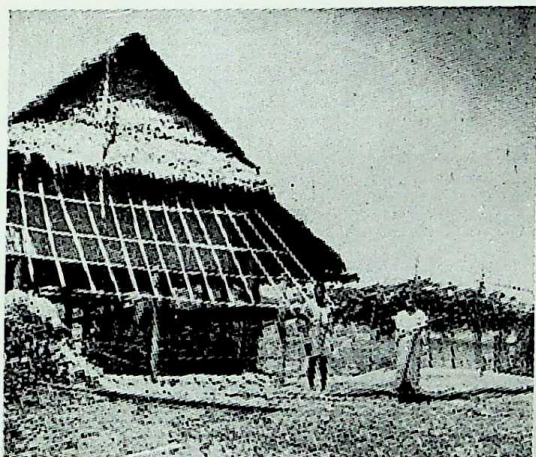
Agriculture	...	...	...	40.0%
Rural crafts	...	...	...	2.9%
Fishing	...	...	...	0.7%
Trade	...	...	...	4.6%
Government Jobs	...	...	...	53.8%

A great decline in the agricultural occupation gave rise to an unbalanced economy. The 40% of the earning heads in agricultural pur-

CHAPTER X
THE LATER SETTLERS



A typical interior view of the
hut of the Karens
(Courtesy A.S.I.)



Hut of a Webi Karen
Village
(Courtesy A. S. I.)



A view of the school of the
Karens
(Courtesy—A.S.I.)

suits is in no way an index of the unbalanced economy in other parts of the world (U. S. A. 18%, France 36%) where the production, with all the improved techniques, of a single farmer can feed many others engaged in secondary occupations. On the other hand the agriculture had developed only for the subsistence as a result of which the more the people shifted from the agricultural occupation to the secondary occupation, the greater will be the dependence on foodstuffs from outside.

Interestingly enough, the 1951 census shows a further decline in the agricultural occupation, and the breakup of the total population is as follows:—

Labour (skilled and semiskilled)	33%
Agriculture & plantation	29%
Office works, trade & commerce	38%

Hence there was a further decrease in the percentage of population engaged in agriculture and the only new productive enterprise adopted by the local-borns is large scale cocoanut plantation. This obviously shows the poor adaptation of the Andaman Indians as the genuine development of agriculture through the innate love of land was practically absent. But with the opening up of a high school in Port Blair and facilities for collegiate education at Calcutta & Madras, the Andaman Indians are becoming growingly qualified to meet the demands of modern institutions but the liking for agricultural pursuit is diminishing gradually.

Bhantus and Mapillas

These people belonged originally to the Indian mainland. The Mapillas, some 1400 in number, were brought to the Andamans as prisoners of the Mapilla rebellion of 1921 in Malabar. The other group, the Bhantus belong to the criminal tribe of Central India and the Government attempted for their rehabilitation for a long time. In 1926 some Mapilla prisoners and some free settlers came voluntarily from the mainland to the Andamans for permanent settlement. These two groups, though belonged to the mainland, have not mixed up with the other group i.e., the Andaman Indians. They live a life of their own which has little affinity with that of the Andaman Indians and therefore, they deserve special mention.

The Mapillas have adjusted themselves very quickly to the environment because of its (environment) similarity to that of their original home in the Malabar. Their industrious nature and skill in crafts have a great say in their adaptation. After only six months of imprisonment,

they were given self-supporters ticket and in consequence, they settled down in the congenial places west of the Mount Harriet Ranges. As in Malabar, the coastal people are engaged in fishing or in trade and the inland people in cultivation, the Mapillas in the Andamans also adopted similar occupations in accordance to their environmental set-up. In the Andamans they avoided forests as they did in their native land. This evidently speaks of the little change of the cultural aspects of these people in these islands.

The Bhandus, on the other hand, with their habits of dacoity and thefts of the criminal tribe of the north and central India have given way to the habits of peaceful and settled agricultural life. This is one of the best examples afforded by the settlers. These people, very few in number (224), live in the settlements situated on the hillocks. The houses are built of local materials and roofs are thatched by the locally available *selai pati* and *bel pati*. This great change has been brought about by the environment which has also offered ample scope for cultivation. They have taken to forest life and sea-fishing to which they were originally accustomed and virtually they live in perfect isolation from other types of people.

The Burmese Settlers

The Burmese settlers are (a) the Burmans and (b) the Karens, the former being convicts from Burma who were transported first in the year 1907-8 and in large batches in 1923. After independence many Burmans repatriated to Burma and the rest are concentrated in the villages of Maimyo and Herbertabad. The later people from Burma were free colonisers in the islands and after proper survey of the islands, Rev. Thru Luggie, the leader of his four associates, selected the sites near Stewart Sound in the Middle Andaman as the suitable spot for the colonisation of the Karens. The first batch of settlers comprising 13 families arrived in 1925 and to-day their settlements constitute the villages of Webi, Base Camp, Letaw and Lucknow.

The cultural characteristics of the Karens and the Burman settlers present distinct individuality of their own.

The Burmans are agriculturists, the principal crop cultivated by them being rice. The agricultural system is very much akin to that of their brethren at home. In Maimyo in the South Andaman maximum number of Burmans live. They are accustomed to forest life and sea fishing. From the forests they collect many of their needs, the building materials, betel leaves, some edible roots, wild deer etc. Many of them have been em-

ployed as Bush Police or in some job of the Forest Department. As already said, these people are free colonisers in the islands. After a proper survey of the islands they settled in the site near Stewart Sound by the side of a fresh water stream and named the place Webi (safe place). The presence of perennial fresh water, complete isolation, avenues of employment to pursue other than agriculture, little fear of aborigines etc. helped in their unhampered development into the most successful colonisers of the islands. They are engaged in agriculture, producing some rice and doing some forestry. Sea fishing is no less an important occupation of the people and they are more regular and expert in fishing than the Burmans.

The Karen settlement is in the north of the Middle Andaman. At Webi the settlement has grown up along both the sides of the river and the houses are typically Burmese with the exception of a few modern structures having iron roofs and sown plant walls.

The Karens have been educated by the European missionaries and even to-day there is a school maintained by them for the Karens. Thus the Karens have developed into a very disciplined, cultural and polite type of people.

The study of the new settlers i.e the refugees of East Bengal predominantly commands a considerable attention and for this reason it has been dealt with after a study of the earlier settlers has been attempted.

Other People

The other people, leaving aside the new colonisers, are the people who have come to the islands for service and business from the mainland of India. The majority are from Madras and West Bengal, the two areas having sea-route connection with Port Blair. A small percentage is comprised of Anglo-Indians, who sometimes back, demanded to make the islands a colony for these people.

DEMOGRAPHY

Leaving aside the present colonisation of the refugees the Andamans, unlike the other parts of India, are fraught with a declining population. The study of the aboriginal population which has already been made show how there has been a great decline of those people. The sequences of settlement that have been experienced in the islands were primarily due to the inflow of the convicts with only a very few attempts of permanent colonisation. Such a historical background has made the picture of the demography far from normal. The success of any colonisa-

tion has been achieved in any country by an attempt of the settlement by a fair and even number of males and females, though in the beginning it is always characterised by an overwhelmingly large number of males. In the Andamans such a situation did not ever arise and the female convicts were extremely poor in number. Though the opportunities were given from the time of Col. Ferrar to the convicts for going to their own native places and bringing back their family members in the islands, the family members did not recognise them in most of the cases. However, the background of the demographic structure will be discussed in the following lines which will show the degree of imbalance of the demographic structure of the islands—the uneven distribution of the population, the unbalanced structure of age and sex and disproportionate development of rural and urban populations.

The population density of the islands is only seven per square mile and this low density contrasts strikingly with the high densities in the other states of India.

Table No 1

State	Density per square mile.
India(as a whole)	284
Kerala	901
West Bengal	776
Orissa	243
Rajasthan	120
Andamans	7

Ministry of Home Affairs.

The distribution of population is very much discrete in character. Most of the human agglomeration was so long confined in the South Andaman especially around the town of Port Blair. The other settlements of little number and significance had developed in the northern part of the Middle Andaman containing the Karen villages. The distribution of the aboriginal population has already been discussed which also shows its concentration in areas of complete seclusion and in a few islands which have so far not been settled by any later settlers. In addition there are scattered forest camps of a small population in different parts of the islands. According to the 1931 census, it appears that 90% of the total population of the islands used to live in and around Port Blair and consequently the forests around Port Blair were cleared, roads were built and other developments were made by convict labour and after

the release of the convicts from the jail, they naturally settled down around Port Blair. This caused the great increase in human agglomeration in this part only though in 1792 the headquarters were shifted from Port Blair to Port Cornwallis in the North Andaman but failed to continue so because of the unhealthy climate of that region. The only permanent settlement outside this area has taken place in the northeast of the Middle Andaman.

Population Growth

Census figures of the population of the Andamans are shown in the Table No. 2. The study of the growth of the population from the year 1881 onwards brings out some salient features. Before 1881 there had been an almost continuous growth of population through the immigration of convicts in the islands and for these people the natural increase of population was practically nil.

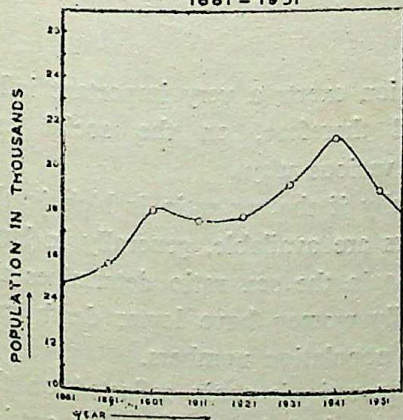
TABLE No. 2

Population Numbers

<i>Year</i>	<i>Total</i>	<i>Male</i>	<i>Female</i>
1881	14628	12940	1988
1891	15609	13375	2234
1901	18938	15158	2980
1911	17641	14737	2904
1921	17814	15551	2263
1931	19223	14258	4965
1941	21316	14872	6444
1951	18961	12734	6227

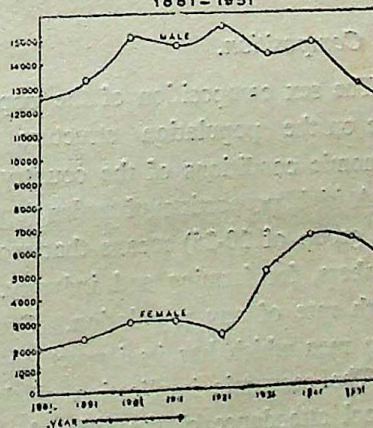
GROWTH OF TOTAL POPULATION

1881 - 1951



GROWTH OF MALE & FEMALE POPULATION

1881 - 1951



The first settlement grew up with only 200 people, the mutineers of the Sepoy Mutiny, brought under the charge of Dr. J. P. Walker in March, 1958 and this population rose to 8873 in 1863. Besides this population, there is the aboriginal population whose growth has been dealt with separately. The population increased steadily upto 1861, and there was a drop of 600 people within the next ten years, this being probably due to death. Again, within the ten-year period from 1931 to 1941 there had been a rapid increase caused by the release of the convicts from the jail who were also given the permission to bring back their wives from their homes or to marry the local convict women. As some convicts brought their wives from the mainland and many of the convicts got married since Colonel Ferrar's rule, population rose from 17,814 in 1921 to 21,316 in 1941 and subsequently a sharp rise in the female population from 2263 to 6444 was recorded. However the male population remained more or less static. The population growth of the last ten years i.e. during 1941 to 1951, experienced a considerable decline. The probable causes of such a decline of 2350 people have been attributed partially to the killing of hundreds of local people and also to the return of many people from the Andamans to their original native homes in the mainland since independence. During this period, many Burmese also returned back to Burma. The net increase in population of the islands during the last seventy years from 1881 to 1951, is only of 4300 people, an abnormally slow rate of increase.

Population Structure.

Besides the population numbers and density, the sex and age compositions are very important determinants of the population structure which have been discussed below.

Sex Composition.

The sex composition of the population exerts a very important influence on the population structure and therefore, on the social and economic conditions of the country in various ways.

A high proportion of males (especially if the sex-ratio is high in the age group of 20-25) means that workers are available, generally in large numbers, for farming and industry. Again the sex ratio determines the death rate of any population. Generally women have lower death rate than men which has its impact on the population numbers.

The economic implication of the sex ratio is again reflected on the school attendance of the girls, the extent of their employment outside

home, the status of women in community and ultimately on the degree of development of the country.

Abnormally high sex-ratio (i.e the number of males per 100 females) is an important characteristic of the population structure of the Andamans due to the predominantly overwhelming male immigration in the islands. In the 1951 census, the sex-ratio was 204, in 1941 230.8 and in 1901 nearly 729. Under such circumstances of sex-ratio, the increase in population of the Andamans must be very low and this again has its influence on the socio-economic conditions of the people. People are engaged in non-agricultural occupation and the deplorably small number of females has evidently resulted in moral vice and corruption. This type of condition can be recalled in the early days of colonisation in the United States which had a large net immigration abroad in which males predominated. But the problem of sex-ratio in U. S. A. has been solved by the movement of fairly even number of males & females in the succeeding inflows. A table showing the sex-ratio of the different countries is given below.

Table No. 3

Country	Males per 100 females	
United States	...	98.6
England & Wales	...	94.2
France	...	90.0
Germany	...	88.2
Soviet Union	...	92.0
India	...	105.8
Andamans	...	204.8

Age Composition.

Every country has population under different age groups and little importance is given to the age composition where the distribution is more or less even. But there are countries like the Andamans which have a very irregular distribution of population under different age groups and this has, again, its impact on the socio-economic condition of the country and the future growth of population.

In the Andamans the majority of the population is under age group of 20-40 which comprise more than 50% of the population whereas the number in age-groups below 20 and over 40 are low. This condition coupled with the low percentage of marriages present a problem of the

decline of population. A table for the comparative study of the age composition is given below.

PERCENT OF TOTAL POPULATION OF THE ANDAMANS
IN DIFFERENT AGE GROUPS.

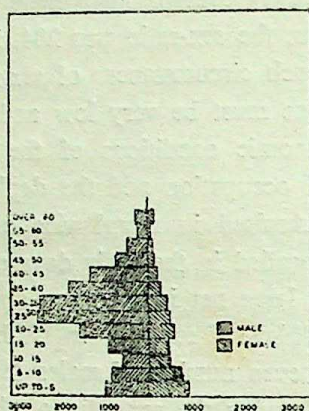


Table No. 4

*Percentage distribution of population by age in different countries
Age Groups.*

Country	Year	Under 10	10-19	20-29	30-39	40-49	50-64	over 64
U.S.A.	1950	19.5	14.4	15.7	15.1	12.8	14.3	8.1
England & Wales	1949	15.5	12.4	14.8	14.7	15.0	16.8	16.9
France	1946	14.1	15.7	13.2	14.8	14.9	16.4	16.9
India	1931	28.4	20.7	18.0	13.7	9.4	1.4	2.2
Andamans	1931	16.5	12.5	26.6	25.3	12.5	4.4	2.2

CHAPTER XI

THE NEW SETTLERS

Being virtually a land autochthones, and later settlers living mostly in the South Andaman, the chances of the all-round regional development of the islands became a possibility after the independence. The new scheme welcomes the agricultural settlement in the islands and for the prospecting of such a colonization, a number of delegations and experts have assessed the capability of the islands. The Punjab Delegation which had been to the islands for estimating the suitability of the islands for rehabilitation of the West Punjab refugees arrived at an unfavourable conclusion as the environmental conditions were in deep contrast to the ones of the proposed settlers. Later on a very useful study was made by Sri H. R. Shivdasani, I. C. S. which forms the framework of the colonisation scheme in the islands. In the long run the islands have been found suitable for the settlement of the East Bengal refugees.

Strangely enough, the Nicobar Islands which are only 120 miles away from the Andamans have not been chosen for colonisation only because of the fact that some of these islands are already overcrowded which, on the contrary, needs dispersal of these original population to some of the other islands and secondly, the healthy and peaceful growth of these people will only be disturbed if such a scheme is thrust upon the indigenous people.

However, for the Andamans the situation is quite different in view of the almost decaying aboriginal population in the Great Andamans and the meagre settlement that has developed is, as has been studied already, not only unbalanced in the demographic structure but also confined in Port Blair and the neighbouring areas. The need for living space of the thousands of refugees from East Bengal can be partially solved, as it is being done, through the settlement of these refugees in the desolate areas of the Middle and North Andaman and also in some parts of the South Andaman.

Prospect of Colonisation

The islands which happen to have an area of 2508 square miles with resources which are not at all of a very high order, cannot obviously present the possibility of colonisation of a high magnitude. The only resources of consideration are the forest and marine resources

with the conspicuous absence of power. So the development of settlement on the secondary occupations is extremely limited, especially in view of the absence of power which shuts the avenues for the development of the processing industries. Therefore, as is common to-day, the resources are sent to the market only after preliminary processing.

Nevertheless, the growth of an agricultural settlement, though not very wide, can be attained. The deep mantle of forest covering all parts of the islands except only few areas of settlements and agriculture can obviously make room for a number of intending settlers. The considerations which determine the number of optimum settlement will be discussed later on. It has however been estimated that approximately 5000 agricultural families can be settled in the islands and upto July 1960, about 3000 agriculturist families have been rehabilitated and each family has been given five acres of cleared land on the plains for paddy cultivation and five acres more of uncleared land for homestead and horticultural purposes together with ex-gratia grant of Rs. 1050 and a recoverable loan of Rs. 1730 to each family. Of the loan Rs. 800 is for house building, Rs. 700 for plough animals, Rs. 130 as the cost for utensils and Rs. 100 for seeds.

However, before getting into the details about these new settlers, the different factors that are of consideration in the settlement of the people will be discussed in the following lines.

Availability of land for Colonisation

How many people may be colonised can be calculated from the amount of land available and the possibility of their utilisation. The land available for colonisation in the Andamans is determined by a number of limiting factors.

(1) The Andamans are under a deep mantle of forest-cover and whatever land is required for agricultural and industrial enterprises of the colonisers must be obtained through the clearance of the forests. But the optimum amount of forest that can be cleared is a controversial topic. According to many, twentyfive per cent of the land of a country should be occupied by forests. But others oppose this view because of the special conditions of these islands and according to them, at least fifty per cent of the land should be under forest-cover.

Mr. Shivdasani expresses the opinion that "the Andamans cannot be regarded as a country by itself. It is a part of India and therefore the average figure of 25 p.c. forest for a country cannot apply to these islands. The question of deficiency in the other parts of the country has to be borne in mind. In spite of the deficiency of the forest area in

other parts of the country we cannot keep these islands entirely under forest. Exploitation and development of any area, specially one which is detached and has restricted communication with the rest of the country and the world at large, make it necessary that the area should be self-sufficient in respect of the labour required for utilisation of the forest and also in respect of its food requirements. Therefore, land within the forest area has to be made available to fulfil these requirements. If the potential wealth cannot be exploited on account of limiting factors like food and labour, there will be wastage. The Punjab Delegation in their report have pointed out that due to our failure to work the Andaman Forests to their full producing capacity there has been a wastage of 96000 tons or nearly a crore worth of timber annually."

Hence the idea of keeping 50% of the land of the islands under forests seems to be the most justified one on consideration of the conditions of the islands. According to the Punjab Delegation, out of a total area of 2500 square miles, the forests should occupy 1300 square miles and of the rest 1200 square miles, 200 square miles may be left out of consideration as being under water, while the balance of 1000 square miles could easily be set apart for agricultural and industrial development. But this figure of 1000 square miles also seems to be a liberal one which will definitely be decreased further because of the other limiting factors.

(2) There should be every attempt for maintaining the peace of the aboriginal population. For this reason, the areas where the aborigines live should be left out of consideration in the colonisation scheme. In the future, of course, as the number of the aborigines decreases, expansion can take place into their territories. The areas to be left out for the aborigines are as follows:

(a) The eastern coast of the South Andaman and a part of the Middle Andaman, which are the Jarawa territories. (289.90 sq. miles).

(b) The Little Andaman is inhabited by the Onges.

(c) The Rutland Island and other three islands (73.86 sq. miles) which constitute the hunting ground of the Onges.

(d) The Sentinel Island is inhabited by the sentinelese; and

(e) A part of the south of South Andaman is visited frequently by the Onges (near about 100 sq. miles in area).

The total area to be set apart for the aborigines may be roughly 500 square miles, which represent about 20 per cent of the area of the islands.

(3) The small islands should not be colonised immediately because the setting up of settlements only for 2 or 3 families in one such island proves to be extremely uneconomical and unless proper communication facilities are set up, these small islands should not be colonised. According to the Forest Department, the area of such small islands is 430.79 or nearly 17% (p.c.) of the total area of the islands.

(4) Slopes of the land must be avoided for agricultural purposes because of the possibility of soil erosion. Soil erosion is a great danger to the cultivated fields because of the undulating nature of the country, the loose types of soil and excessive rainfall which washes away the soil. "Even in the valleys, which may be cleared for cultivation, care has to be taken to maintain water for the streams so that they do not dry up and trees have to be retained along the banks to prevent the erosion of the banks."

(5) The swampy areas, such as the submerged regions of Flat Bay, Shoal Bay Creek, Porlob Jig, Boroin Jig, Yol Jig etc. are occupied by mangrove swamps which can hardly be reclaimed at profit for their use as agricultural areas. There are also areas specially near the mouths of sweet water nalas where during the dry season and high tide, the sea enters the mouth of the river and has rendered land around it salty and unfit for commercial forestry.

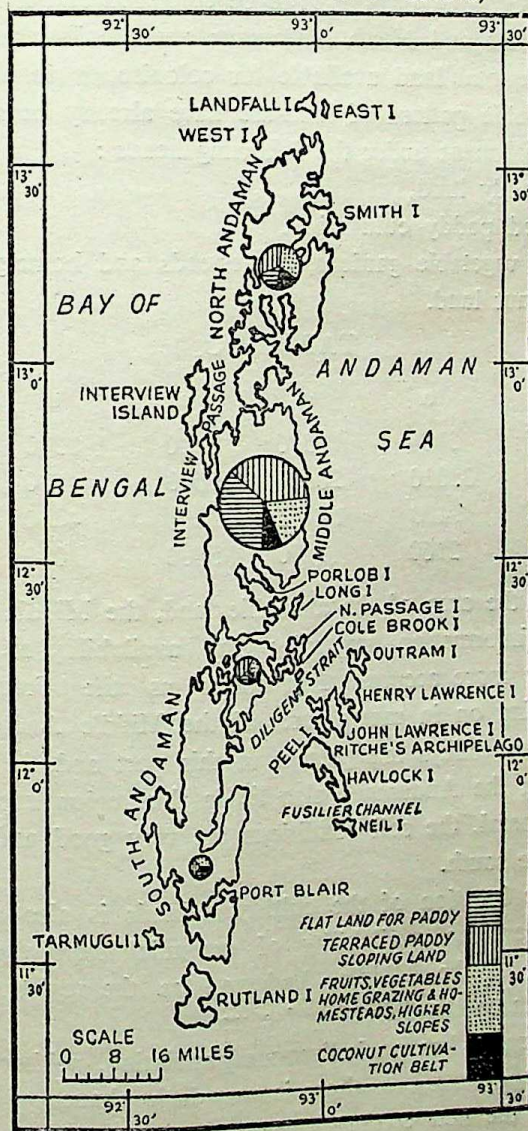
(6) There are also other areas which are at present inhabited by older settlers and hence set apart from the calculation of colonisation areas.

Bearing all these factors in mind, it may be reasonably estimated that 226 square miles can be reclaimed through the clearance of forests in the Great Andamans. A rough calculation will show how the area of 226 sq. miles can be made available for colonisation.

1. Area reserved for forests	...	1300	square	miles
Area reserved for aborigines	...	500	"	"
Area of the small islands not to be colonised	...	430	"	"
Other areas which cannot be colonised	...	52	"	"
		<hr/>		
Total area of the Andamans	...	2282	"	"
Area which cannot be colonised	...	2508	"	"
Area which can be colonised	...	2282	"	"
	...	226	"	"

2. The Forest Department has divided the area of 226 square miles		
(a) Flat land for paddy	...	37,730 acres
(b) Sloping land for paddy	...	53,850 "
(c) Higher sloping land for fruit and vegetable gardens, house steads and homegrazing	...	38,690 "
(d) Cocoanut cultivation belt	...	12,100 "
Total	...	142,370 "

FUTURE POTENTIALITIES OF LAND
UTILISATION IN THE ANDAMANS
(ACCORDING TO THE COLONISATION SCHEME)



From a survey of the actual spots of colonisation and of the background of their physical conditions, i.e., physical features, climate, resources, soil erosion etc., a picture of the possible future land utilisation of the islands can be realised. The essential feature of the land utilisation of the islands would be agriculture besides a little amount of forestry and fishing. All the spots to be colonised are either river-valleys which lie in the longitudinal valleys having the availability of water and flat lands or the coastal regions which are specially suited to cocoanut cultivation, forming a belt 200 yards wide. As has already been said, the Great Andamans is to be colonised and it includes mainly the South, Middle and North Andamans and the Batatang Island. An estimate of the total land available for colonisation in all these islands and their probable pattern of land-use have already been attempted by the Forest Department under the following heads :

- (a) Flat paddy land,
- (b) Terraced paddy cultivation,
- (c) Fruits, vegetable gardens, homesteads and home-grazing,
- (d) Cocoanut land.

TABLE NO. 1

Regions	a	b	c	d	Total
S. Andaman	3100	5550	4200	1300	14150
M. Andaman	25030	28600	15600	4530	73760
N. Andaman	7440	12200	13290	4230	37160
Baratang Island	2160	7500	5600	2040	17300

As regards the area of the available land, the Middle Andaman tops the list. The information regarding the availability of land is also expected to be more accurate than others as the Forest Department working is going on in many parts of the Middle Andaman. A large number of river valleys are present in this part and the biggest of the river valleys in the Andamans also lie in this region known as Betapur valley. In general, the soil conditions are very good and the rainfall is less than in the south.

Hence the location of the cultivated lands is also dependent to a large degree on the availability of perennial supply of water. The relative merit of the Middle Andaman as the region best suited for settlement owes to the following factors.

- (1) This region has no indigenous population, neither aborigines nor later settlers, and therefore, there is very little chance of any clash with the culture of the new settlers.

(2) The biggest river valleys of the Andamans lie in this region giving rise to very wide plains with perennial flow of water. This evidently facilitates rice cultivation. The Betapur Valley, Rangat area, Happy Valley etc. really form the most alluring spots of human settlement.

The next important region of colonisation is the North Andaman. Information regarding the availability of land in North Andaman is based entirely on the insufficient local knowledge of the forest officer. It has already been stated that the Forest Department lost all their records during the enemy occupation-period and therefore, for much of the informations supplied to them, Forest Officers have relied on their memory and impressions.

Though North Andaman has fair prospect of colonisation, it has not yet been colonised because the other regions, especially the Middle Andaman, provide room for further settlement and also due to the thick density of the forests of the islands, which have been leased to Messrs. P. C. Roy & Co.

Baratang Island possesses a few areas suitable for settlement.

The South Andaman has the least amount of available land for settlement and the obvious reason for this is the smallness of the area of the islands. Besides this, South Andaman does not offer so much facility for colonisation as is found in other regions, particularly in the Middle Andaman. The limiting factors of colonisation are as follows :

(a) "Except for the Shoal Bay east and west, the rest of the areas under primary forest in the South Andaman has not been declared as Reserve Forest. The Inspector General of Forests is moving for the inclusion in the Reserve Forest roughly about 80 sq. miles more." This definitely means a shrinkage of the available space.

(b) Large areas in the west coast and probably also in the south of South Andaman have to be set apart from the colonisation because of the inhabitation of the aborigines.

(c) Though not large, sufficient amount of land is already occupied by the people of the Andamans. No attempt should be made to colonise the people at the cost of these people.

(d) There is a great doubt as regards the peace of the colonisers in these areas where the permanent inhabitants of the Andamans live. The superimposition of such a new culture on the existing one may disrupt peace and tranquillity of both the parties. It is advisable that the

colonisation in South Andaman should not be made in those regions where the local people are living.

In spite of all these limiting factors, South Andaman proves to be the most alluring spot of colonisation for many settlers. This is because of the presence of Port Blair and the quite good communication facilities which do not bring the sense of isolation among the colonisers in contrast to the other parts of the islands. The spots of colonisation are either the river valleys, longitudinal valleys or plain lands along the coast. The rainfall is near about 130" or more with almost no rainless month. The soils are also of good quality. Hence the physical conditions are quite good and the knowledge of the conditions of agriculture can be had from the experiences of the local people.

An examination of the exact spots of the possible areas of colonisation is given below:

POSSIBLE AREA OF COLONIZATION IN THE MIDDLE ANDAMAN

- | | |
|----------------------|--|
| I. Tugapur | IX. Bamlunga |
| II. Karmatang Valley | X. Charlungta |
| III. Paikat Bay | XI. Lurutong |
| IV. Cuthbert Bay | XII. Boroin Jig and Raolungta |
| V. Betapur Valley | XIII. Waterfall valley, Red Creek,
Bania Khari and Yaratil
Jig |
| VI. Happy Valley | |
| VII. Rangat Area | |
| VIII. Yol Jig | XIV. Lewis Inlet |

The available land in the above-said spots has been classified under the following land-use categories:

- (a) Flat paddy land
- (b) Terraced paddy cultivation
- (c) Fruits, vegetable gardens, house steads and house-grazing
- (d) Cocoanut land

The examinations were made by the Forest Department, and has been further analysed by Sri H. R. Shivadasani in his report. The author also tried to clarify the conditions.

TABLE No. 2

Area	a	b	c	d	Total land available	Quantity of timber on the land
I	800	1000	1000	200	3000	5 tons per acre
II	100	500	500	400	1500	12 " " "
III	50	500	500	400	1450	15 " " "
IV	70	500	500	630	1700	15 " " "
V	9000	5000	1000	200	15,200	20 " " "
VI	400	1000	1300	200	2900	20 " " "
VII	1800	2000	700	200	4700	15 " " "
VIII	600	1000	100	nil	1700	15 " " "
IX	1500	3100	2000	nil	6600	15 " " "
X	1000	2500	1500	nil	5000	15 " " "
XI	60	500	500	nil	1060	15 " " "
XII	150	1000	1000	nil	2150	15 " " "
XIII	6500	5000	2000	300	13,800	20 " " "
XIV	3000	5000	3000	2000	13,000	25 " " "

As regards the relative merits of the possible spots of colonisation, the amount of flat land available for paddy cultivation should form the primary criterion. The Betapur valley with a total available land of 15,200 acres offers 9000 acres of flat land suitable for paddy cultivation. This is the biggest river in the Andamans and drains a considerable portion of the Middle Andaman. Obviously, the position of water supply in the plains is quite satisfactory for agriculture.

"According to Mr. Sethi, the country from the place, where the Picha Nala meets the Betapur stream, though interspersed by small hills, is almost level for 7 or 8 miles. The portion is considered by him suitable for cultivation. The soil, like that in most other valleys, is rich loam and clayey at places. Pilcha, Korang and Betapur, which are big streams in this area, had some water while the other small streams are more or less dry. Mr. Sethi could not give an opinion about the water-table in connection with the digging of wells. He further thought that the streams in the Shoal Bay, which were smaller, contained more water while the water in Betapur, Pilcha and Korang rivers was not in proportion to the size.¹ According to him, out of a total area of about 58,000 acres of the Betapur valley, 12,000 to 13,000 acres could be used for cultivation. In the east 8 miles of Betapur towards Webi the valley was found to be undulating and the hills were covered with thick forest. This was the most difficult part of the country in the whole Andamans and entirely unsuitable for cultivation."²

¹ According to the author this is due to the greater as well as continual rainfall in the South Andaman (Port Blair—130") as compared to the Middle Andamans (Long Island).

² Shivdasani, H. R.—Report on the possibilities of colonisation etc, Government of India, Ministry of Home Affairs.

The other important areas are Waterfall valley (No. XIII), Lewis Inlet, Bamlungta, Charlungta, Happy Valley, Rangat area etc. In general the water-supply condition of all these areas are quite satisfactory except perhaps Lewis Inlet which has got only a very few streams.

But only the availability of cultivable land in the areas does not give a picture of their actual possibilities of immediate colonisation. The prospect of immediate colonisation depends on a number of factors, such as—

- (a) Position—i.e. whether it is near a disembarking harbour & enjoys facilities of communication with Port Blair.
- (b) Water supply
- (c) Amount of forest cleared.

On the consideration of the above said factors, it becomes apparent that Tugapur, which lies close to Port Bonington and is heavily felled, and Happy Valley, Rangat area, Yol Jig, Bamlungta etc. in the south of Middle Andaman which are also heavily worked by the Forest Department being quite near to the Long Island provide immediate opportunities of colonisation. But the regions of the west coast are not at all suited for the immediate settlement because of (a) the deep forest cover, (b) the Jarawa territory and (c) the last but not the least important is the complete absence of any port in the western coast of the islands.

POSSIBLE AREAS OF COLONISATION IN THE NORTH ANDAMAN

- | | |
|---|--|
| I. Pine Bay Valley. | XIV. Shallow Bay. |
| II. Beele Valley. | XV. Teel Creek. |
| III. Elizabeth Bay. | XVI. Between Teel Creek and Kuda Khari. |
| VI. Area between Elizabeth Bay and Cold stream Bay. | XVII. Baluri Creek. |
| V. Cold Stream Bay. | XVIII. Parangara. |
| VI. Hudsan Bay. | XIV. Kalara. |
| VII. Casuerina Bay. | XX. Area between Mangrove Bay and Cadell Bay. |
| VIII. Coffris Bay. | XXI. Area between Cadell Point and Dundes Point. |
| IX. M'c Pherson Bay. | XXII. Digilpur. |
| X. Pumbroke Bay. | XXIII. Thaipong. |
| XI. Hoare Bay. | XXIV. Blair Bay. |
| XII. Area between Hoare Bay and Buchanan Island. | XXV. Terapa Bolin. |
| XIII. Area between Buchanan Island and Steward Sound Harbour. | XXVI. Palchitara Bolin. |

THE NEW SETTLERS

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The total available land and their classification into the previous land-use categories are given below:—

TABLE No. 3

Area	a	b	c	d	Total land available	Quantity of timber on the land
I	200	500	500	500	1700	8 tons per acre
II	200	500	200	100	1000	8 " " "
III	600	500	500	100	1700	10 " " "
IV	200	500	300	300	1300	Not known
V	600	500	500	100	1700	2 tons per acre
VI	250	600	400	50	1300	12 " " "
VII	500	500	500	200	1700	12 " " "
VIII	60	150	200	100	510	10 " " "
IX	60	500	300	240	1100	8 " " "
X	100	500	400	100	1100	8 " " "
XI	100	100	500	300	1000	10 " " "
XII	200	500	500	100	1300	8 " " "
XIII	nil	200	1000	50	1250	5 " " "
XIV	60	250	540	100	950	5 " " "
XV	60	600	400	40	1100	5 " " "
XVI	50	300	200	50	600	5 " " "
XVII	200	500	500	100	1300	10 " " "
XVIII	500	1000	500	500	2500	10 " " "
XIX	1500	500	500	200	2700	10 " " "
XX	100	300	200	100	700	25 " " "
XXI	150	500	500	200	1300	25 " " "
XXII	600	500	1000	100	2200	10 " " "
XXIII	400	500	1000	100	2000	10 " " "
XXIV	250	500	650	100	1500	10 " " "
XXV	200	700	1000	300	2200	7 " " "
XXVI	300	500	500	200	1500	8 " " "

In the North Andaman big valleys are not at all found but the number of the coastal plains and valleys is maximum in this island. The Kalara valley is the biggest of its kind in the North Andaman with a total available land of 2700 acres out of which 1500 acres are flat lands suitable for paddy. It is situated to the west of the Saddle Peak Range and the water supply is believed to be quite good.

The other factors determining the prospect of the spots for immediate colonisation are discussed under the heads as done previously. (a) Position, (b) Water supply (c) Amount of forest cleared.

The conclusions that can be made regarding the suitability of the areas for immediate colonisation are the good prospects of the Parangara and the Kalara valleys. These two valleys are sufficiently big to allow settlement of a fairly large number of families which may be as much as 100 families in the former and 300 families in the latter case. The bigness of their areas is not the only measuring scale for the prospects of these areas, but also on the nearness to the part of disembarkation and the amount of forest clearing. As regards these factors, the above-said areas are the best more suitable for colonisation in the immediate future. If speculation over the distant possibilities of the areas are made, the big areas with good water-supply may be considered to be the best. As a matter of fact, the Digilpur area, an inland valley region, is the most promising of all other areas in the North Andaman so far as the physical background of the valley is concerned.

POSSIBLE AREAS OF COLONISATION IN THE SOUTH ANDAMAN

- I. Putatong.
- II. Shoal Bay West (Pachang, Girkatong, Buratoga Jig, Miletek, Giritu Tilek).
- III. Shoal Bay East (Kalatong to Yaratong).
- IV. Burmanala to Chiria Tapu.
- V. Sukhanala area

Division of the area into the previous land-use categories are as follows.

Table No. 4

Area	a	b	c	d	Total land available	Quantity of timber on the land
I	200	1500	1000	nil	2700	12 tons per acre
II	1500	2000	1000	nil	4500	8 " " "
III	800	800	800	600	3000	8 " " "
IV	300	650	600	400	1950	25 " " "
V	300	600	800	300	2000	25 " " "

The South Andaman has the best advantages of colonisation in the immediate present days because of the great communication facilities and the knowledge regarding the conditions of climate, soil and agriculture are the best known of all the islands. But the great reluctance of the local people is leading to some minor clashes of interest among those people and the new settlers.

All the areas mentioned except Putatong in the South Andaman have facilities of road communication from the town of Port Blair. The Shoal Bay East and the Shoal Bay West have been heavily felled and the average tonnage per acre is 8 in this area. The areas IV and V are believed to be a part of the Onges territory and the actual working of the colonisation should be undertaken after proper knowledge regarding the regions. The water-supply conditions in the valleys of the South Andaman are the most satisfactory of all other parts. The streams though fed by rain water, have an almost perennial supply of water because of the absence of any rainless month and the amount of rainfall also exceeds others.

POSSIBLE AREAS OF COLONIZATION IN THE BARATANG ISLAND

- I. Pana Jig.
- II. Luru Jig.
- III. Wrafter's Creek, Ragola Chang Creek and Jarawa Creek.
- IV. Area from Bomlungta to Flat Bay.
- V. Ada Jig.

The total available land and their classification into the previous land-use categories are given below.

Table No. 5

Area	a	b	c	d	Total land available	Quantity of timber on the land
I	300	500	500	200	1500	10 tons per acre.
II	700	1000	1500	700	3900	10 "
III	800	2500	2000	1000	6300	10 "
IV	300	2000	1000	100	3400	5 "
V	60	1500	600	40	2200	5 "

Besides the Great Andamans (N. Andaman, M. Andaman, S. Andaman and Baratang Island) there are innumerable small islands. The possibility of colonisation in those islands, which are extremely small, are doubtful and there are only a few islands, which provide 100 acres of flat land for paddy and 100 acres plot is considered as the minimum economic limit for colonisation. Areas with less than the above-said acreage prove completely uneconomical in view of the difficulty in maintaining communication. "Some are so tiny as to be of no use, while in the rest, a fair amount of protective forest must be left standing with the result that the available area will be appreciably reduced. On account of the paucity of paddy land, want of communications with

the mainland mass, insufficiency of potable water or similar other reasons, the bulk of these islands can best be used for production of export commodities e.g. fruit, cocoanut etc.”¹

The Forest Department calculated the maximum area of 62 sq. miles that can be made available for colonisation in the small islands and classified it into the following land-use categories.

a. Flat land for paddy	...	1570 acres.
b. Sloping land for terraced cultivation	...	560 acres.
c. Land growing fruits and vegetables	...	1400 acres.
d. Land for cocoanut plantation	...	35,900 acres.

The following table presents the list of the small islands and indicates their areas and the acreages of land that can be made available for settlement.

Table No. 6

Island	Total area	Land available for settlement
I. Landfall	6.2 sq. miles	200 acres
II. North Reef	0.75 "	400 "
III. Smith Island	7.9 "	420 "
IV. Chatham (North Andaman)	0.6 "	nil
V. Interview	41.4 "	26,000 "
VI. Anderson	6.8 "	1,200 "
VII. Benett	1.7 "	1,000 "
VIII. Long Island	5.1 "	3,200 "
IX. Paget	1.7 "	Not known.
X. Strait	1.2 "	420 acres
XI. Henry	7.84 "	nil.
XII. Kyd	1.6 "	240 "
XIII. Ranger	1.7 "	Not known
XIV. Cinque	2.96 "	nil
XV. Tarmugli	4.8 "	1,800 acres
XVI. Alexandra Island	1.7 "	1,000 "
XVII. Red Skin	1.4 "	600 "
XVIII. Hobday	1.3 "	850 "
XIX. Defence	2.12 "	800 "
XX. Flat	0.25 "	100 "
XXI. Boat	1 "	600 "

¹ Shiydasani. H. R.—Report on the possibilities of colonisation etc, 1949.

THE ACTUAL FUNCTIONING OF THE COLONISATION SCHEME

The actual functioning and the progress of the colonisation scheme are determined by the degree of materialisation of the working scheme for settlement. The amount of the clearance of forests in the spot of settlement, the communication facilities, provision of these people for food and shelter i.e. construction of reception camps etc., supervision of the government officers, the training given to the new people in their methods of agriculture in the islands and finally their response etc. necessarily measure the degree of success of the settlement. As the colonisation scheme has been partially translated into action, the defects of the details of procedure regarding the scheme can be detected and also can be easily corrected. The main activities with regard to the planned settlement are given below and as already said, they are.

- (1) The clearance of forests.
- (2) The communication facilities.
- (3) The creation of the Reception camps.
- (4) The Government supervision.
- (5) The response of the people.

The Clearance of Forests

The room for the settlement and agriculture of these people is made through the clearance of the forests. The actual availability of lands through the clearance of forests in the islands and their detailed land-use classification have been given in the previous pages. But the clearance of land to make it ready for cultivation and settlement is a long process unless the (a) availability of elephants and other equipments, (b) the marketing facilities of the timbers, (c) the transport facilities etc. are not in good combination to accelerate the process.

The work of the clearance of the forests has been invested on the Forest Department and it is found that the actual clearance is far less than the calculated amount. This backlog in forest clearance, according to many people, arises out of the negligence of the Forest Department who does not care this work to be one of their department. Besides this, the other factors, already mentioned, stand in the way.

The whole of the North Andaman has been given to P. C. Roy & Co. at an annual royalty of 50 lacs of rupees for the forest exploitation as well as clearance of land for the settlement.

The Communication Facilities

The communication with Port Blair and the actual spot of colonisation is maintained by water ways except in the South Andaman and unless the communication facilities are increased, the movement of the settlers into the spots of colonisation would be slow.

The Reception Camps

The Reception Camps are to be constructed for receiving the people immediately after they disembark in the port. The camps are generally made of local materials and are temporary in character. They are generally situated near the disembarking station which is close to the spot of colonisation and therefore, long barracks are erected with the provision of 6 families to live in. During the time of stay of the settlers in the reception camps, they are provided with all necessities. Each family is given a monthly subsistence allowance which is Rs. 30/- per adult and Rs. 15/- per child below eight years upto a maximum of Rs. 100/- for 9 months, a pair of bullocks, and a milch cow or buffalo, house building materials worth Rs. 1,200/- and Rs. 300/- for labour charges for the construction of the houses. The above said facilities were given to the first batch of the settlers on a loan basis and the later batches of new settlers were given loans under different heads on a varying scale, which was on the whole higher than that provided under the first Five-Year Plan.

Government Supervision

The Government supervision is extremely essential for the smooth settlement. As the people possess inadequate knowledge of the new land, proper training in agriculture, house building etc. should be imparted by the government.

Response of the People

The islands present a remarkable picture of interplay of land and sea. The South Andaman is more developed than an average district in an Indian state with all types of facilities. The great drawback of the islands arises out of its separation from the mainland by more than 700 miles. The response of the people counts much in settling the land. The natural reluctance of all the East Bengal refugees for some time developed due to many factors. The history of the islands as a penal settlement naturally make these people suspicious about the land and besides this the great isolation of the islands and belief in the incredible stories about the

aborigine hostility resulted in a poor response of the refugees from East Bengal.

As a matter of fact, besides the great distance of the islands from Calcutta or Madras, the islands have no great disadvantage as a land of colonisation. It has already been noticed that there is a growing willingness of the refugees in settling in the islands and this change has been brought about by the actual experience of the people who ventured to sail for the islands earlier.

If all these above factors are met up satisfactorily, the translation of the colonisation scheme becomes easy as well as rapid.

PROGRESS OF COLONISATION

The settlers were taken in batches in the Andamans for colonisation and their arrival was being determined by the amount of cleared forest land available, the season of the year and the shipping facilities. As analysed in the previous pages, the Middle Andaman proved to be the most prospective region. All these settlers are East Bengal refugees and sailed from Calcutta by S.S. Maharaja owned by the Andaman and Nicobar Government and S.S. Bharat Khand by P. C. Ray & Co. which now-a-days have been replaced by the Rayandamans owned by the same company.

The first colonisation area has been in the South Andaman because of the presence of the already cleared lands, the nearness to the administrative headquarter, communication facilities etc. With the clearance of the forest land in the Middle Andaman, this part became the main centre of colonisation. Two regions have so far been settled by the new comers.

(1) The South Andaman or the neighbouring regions of Port Blair, and

(2) The Rangat area in the Middle Andaman.

The first batch of 202 families for settlement was rehabilitated in March, 1949 in the neighbouring villages of Port Blair such as Hamphraygung, Monglution and Maimyo etc. The house of these new settlers have not been constructed in isolated areas but in the villages of the local people. All the houses are made of wood, the floor is raised 7 ft. above the ground for the prevention of the dampness and walls are either of bamboo or wooden planks with G.C.I. sheet on the roof. The roof has got two slopes from the centre on both the sides. The government provided these people with all these materials and the construction of the houses was also made by the Government. This evidently

led to a great uniformity in house types. In the South Andaman they are generally agglomerated in one place or nuclear in type. These new settlers were provided with all types of facilities. They were given a considerable amount of loan, 10 acres of land per family, half of the land being slope lands and the rest flat lands suitable for paddy cultivation.

Within 1949-52, 450 families were sent for settlement in the South Andaman. They have been settled not only in the above-said villages in South Andaman but also in a number of areas just south of Port Blair. Of them, 5 families returned back to West Bengal due to the death of their family heads and the rest because they were not genuine agriculturists.

Most of the families have settled peacefully in the islands. In the meantime, the agricultural practices have been started. Primary school has been opened in the South Andaman for the education of the boys.

The Middle Andaman, without doubt, has achieved the greatest success of colonisation. The relative success and failures of different spots of colonisation will be discussed afterwards. In the first two years, 1953-54, of the Rangat colonisation scheme in Middle Andaman, 438 families have been settled. It was proposed that a total of 5000 families, 75 p.c. of them being Bengalees, will be settled in the Rangat Valley by 1958.

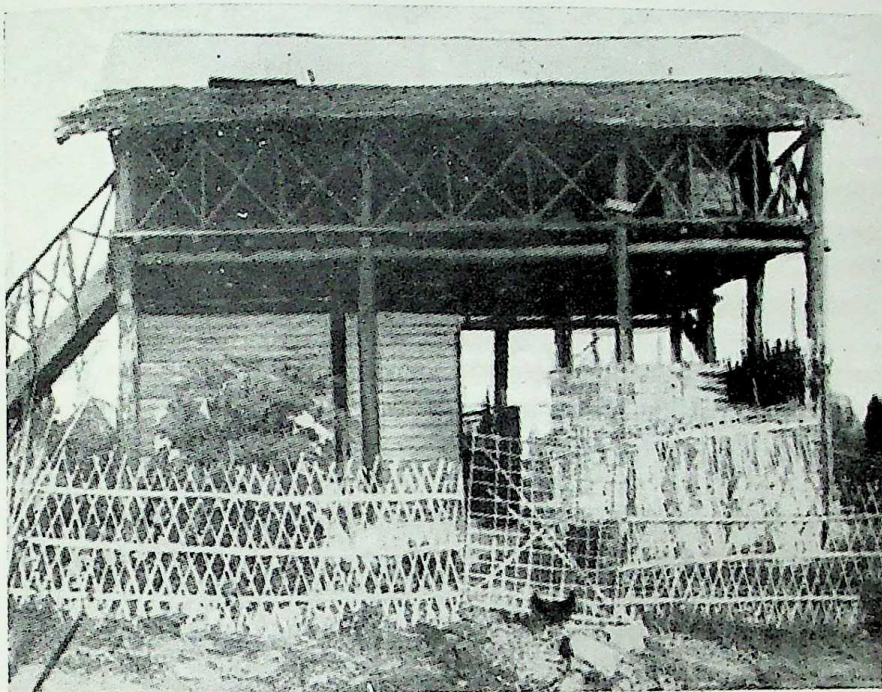
The selection of the Rangat Valley in the Middle Andaman was made due to the communication facilities with Long Island, besides the suitability of water-supply, soil type and availability of land congenial to the growth of the settlement. In this connection, it may be remembered that the Betapur Valley which has been considered to be the best of all the areas in the Middle Andaman remains untouched because of the relative disadvantage of communication as compared to the Rangat Valley.

The Rangat Valley is about 45 miles from Port Blair and the relative easiness in the clearance of forests was primarily due to the nearness of the Long Island which is only 5 miles from Yarata, the coastal jetty of the Rangat Valley. The Long Island, already developed as the head quarter of the Forest Department, was also made the head-quarter of the functioning of the colonisation activities in the Middle Andaman and immediately before the actual field operations were undertaken, the officers and people engaged in the operation-scheme assembled over this place.

The preliminary activity was initiated by the Forest Department. The marking of the marketable trees was done and the felling operations began. The saleable trees were billeted, brought to the log-deck

CHAPTER XI THE NEW SETTLERS

A house of the New Settlers



Construction of a Bridge

by the elephants and loaded in tramline wagons for movement to Yarata. The logs were then rafted in tank landing crafts to Port Blair and other places. The unsaleable trees were collected and burnt. The operation continued for about 4 months. Along with the clearance of the forests the tram lines were laid down, small wooden bridges were constructed over the streams and camps were built. The camps were built 5 miles interior from Yarata. As said previously, these camps were all wooden and bamboo houses with walls of bamboo matting. Every camp provides accommodation for 6 families, each family with 1 room and a kitchen.

In the month of May, 1953 the first batch of the refugee families was rehabilitated in the Rangat Valley and gradually the members of the families have been added to become as much as 438 Bengalee families within the two-year period from 1953-55. The people immediately after their arrival, were accommodated in the transit camps, given 10 acres of forest-cleared land with stumps of trees spread all over the field and the forest stumps occupied 25-50% of the total area. The people were provided with all the necessary requisites for cultivation, a loan of Rs.2,000 and sometimes more to cover the monthly subsistence allowance of a maximum of Rs.60 for 6 months etc. Of the total land half is flat land suitable for paddy and the rest of 5 acres is on the hill slopes near the house for vegetable gardening, fruit growing etc. These people are not to be taxed for the first three years since their settlement. In about one year, these people were provided with permanent houses, double storeyed buildings with galvanised sheet roofs, and wooden floors and walls. The ground floor is used as the store room for their grains and this cannot be used as bed room because of the dampness of the soil.

The cultivation is of the jhum (they were asked to do so) type as practised by many hill tribes of Assam and Chotonagpur. With a small hoe they raised the soil in between the stumps and burnt the woods. The practice of this type of cultivation was urged only because of the presence of the stumps of the trees and luxuriant growth of other plants. So long the rice is being grown once a year, the sowing of the seeds begins in the month of June and harvested in December. The virgin soil, with good soil fertility and timely rainfall yielded copious grains and almost all the people were happy with this result.

These people have got other sources of occupation mostly as forest labourers on a daily wage basis.

A glimpse into the changing land-use pattern due to the recent colonisation is really encouraging. The settlements in the villages are nuclear in type and their cultivable lands lie all around the villages. The lower plains are devoted to the growth of paddy and *dal* and the growth of paddy is highly commendable and the yield is 42 mds. per acre (1 md = $82\frac{1}{2}$ lbs). A small patch of land in front of the house is devoted to vegetable gardens for home consumption and the higher slopes of land are given over to banana cultivation and in some cases to fruit growing. The first 3 years of settlement of the refugees are the years of bitter struggle against the foreign set-up of affairs for preparing the framework of a happy and self-sufficient home. Forests have been cleared at a fast pace along with the laying down of tram lines from the coast to the region of settlement, tractors are ploughing the fields, elephants are clearing the forests, trams are running from different parts and the new-comers are busy in creating a congenial home; these are the dynamic aspects of colonisation.

The area of colonisation is being gradually expanded. The clearance work is simultaneously going on in the Happy Valley giving a total cleared area of 3373 acres. Upto May, 1955 more than 600 families have arrived and before the next paddy season which begins from August, additional 400 families are expected. Of the families who have settled in the Middle Andaman, 72 are from Travancore-Cochin, 5 are evacuees from Burma and the rest are the refugees from East Bengal. Of the 440 families, this year's quota, include 30 families each from Bombay, Madras and Travancore-Cochin.

The forest camps previously named as Camp I, Camp II etc. were renamed as Sitapur, Dasarathpur, Nebutala, Amkunj, Panchabati, Padmanavapuram, Parnasala, Sabasi, Janakpur etc. Each village with a population of more than 200 persons presents an interesting cultural manifestation of the new colonisers.

THE ADAPTATION OF THESE NEW PEOPLE IN THE ANDAMANS

The degree of adaptation of a group of settlers depends upon the nature of the land and the local people, what can be called as the environmental complex and besides this on the capacity of adaptability of the new people. If the nature of the land be completely different from their original one, there are obviously dangers of mis-adaptation giving rise to disorder and discontentment. That seems to be the main reason of the

very little colonisation that has taken place in the Queensland in Australia, the land having tropical climate makes it uncongenial for the settlement of the whites, the people from the temperate lands. On the other hand, that piece of land can be easily colonised by people from South East Asian countries. Again the capacity of adaptation of the people to a foreign set-up of affairs is no less potent factor in the success of adaptation. Regarding the Andamans, it can possibly be said that the people from Rajputana or Punjab will encounter more difficulties in adaptation to the islands than the people from Bengal or Madras.

In this connection it may be recalled that the Punjab delegates found these islands to be unsuitable for the refugees from West Punjab because of the great dissimilarity in the original home of these people and their types of occupation to what is the nature of land and the type of practices that should be taken up in the islands. It should also be borne in mind that the colonisation of the refugees from East Bengal, Malabar, or Travancore Cochin are not under forced compulsion of the people.

The people who are being rehabilitated in the islands should be necessarily agriculturist as agricultural occupation is to be adopted in the Andamans.

The East Bengal refugees come from the different districts of East Bengal. The nature of East Bengal land is of the monotonously plain type with riverine features. The rainfall is brought by monsoons and exceeds more than 100" in places. The general agricultural practices of the peasantry are the rice culture with jute and vegetable growing etc. Little forests are encountered in their fields except the small woods consisting of bamboos, mango trees etc. As regards the social structure of the people, there is a division of labour in the villages which has evolved through the prevalent caste system.

The close similarities of the land of East Bengal and that of Andamans which prove favourable for the successful adaptation of the refugees to the islands are:

(1) The refugees are the people of East Bengal where the climate is as hot and humid as in the Andamans. The rainfall is monsoonal in both the regions.

(2) Rice culture is to be practised in the Andamans, which is not unknown to these refugees. The basis of the actual agricultural practices is the rice culture in both the lands, of course, varying to a great extent.

But the great differences are as follows:

(1) The nature of the physiography of both the regions varies appreciably. Bengal is a deltaic plain land and specially so, the East Bengal where the active processes of delta building are still continuing. The land is inundated during the monsoon months which facilitates the inundation method of rice culture. But the Andamans offer a different type of physiography which have alternate ranges and valleys. The valleys which form the flat lands with small streams have been cleared for settlement and agriculture and on all sides are the hilly lands covered with forests. Though the river valleys are fertile and flat, they hardly excel that of East Bengal and the amount of water supply in the valleys available due to the precipitation caused by the monsoons is more erratic and cannot be supplemented by the stream water.

(2) Every agricultural village has got its forests inside as well as all round it in the Andamans. Such is not the case in the East Bengal agricultural lands. The forests rather predominate the agriculture of the islands and the agriculture is also influenced, as such, to a great extent by the forests.

(3) In the agricultural villages of East Bengal, there is, as said earlier, a distinct division of labour. In the Andamans, all the refugees are to take agriculture and no division of labour in the village economy has yet been attempted.

It is too early to establish tentatively anything regarding the adaptation of the East Bengal refugees to the Andamans. But within the 5 years of their colonisation, the adaptation will be attained. It has been observed by the author that the refugees in the South Andaman and the Middle Andaman are adapting themselves to the islands in different ways.

Adaptation in the South Andaman

In the South Andaman the newcomers were resettled in the already cleared areas in the villages of the local people. The people are in an advantageous position to pull on their agricultural practices and other activities from the knowledge of the local people. These new people are found not to adapt themselves in the right way, as conceived in the colonisation scheme. It is found that many people instead of utilizing this large amount of money, land and Government co-operation, have become addicted to all sorts of vice and corruption. Quarrels between the villagers, complete destitution etc. have been a great menace to the successful adaptation of these people. The people are being drawn

towards the town of Port Blair for merry making and free mixing with other people. It is observed that the young people have generally developed a reluctance for taking up the occupation as agriculturists and this will obviously lead to a very wrong type of adaptation.

The sociological factors have again stood in the way of good adaptation. The settlement of the new settlers in the villages of the local people, very frequently leads to clash of interests of both the peoples. The seeds of disharmony have been sown by a group of local people. Before these new settlers could have a stability in their lives, propaganda was made by the local people against further colonisation in the South Andaman. The existing culture has influenced them very much which can be easily observed in their conversations, often in their mode of livelihood etc.

The basic point of mis-adaptation may be enumerated as follows:

1. The negligence towards agriculture and the lump sum grants that they received from the Government are being spent lavishly in Port Blair.
2. Change of their culture under the impact of the indigenous one.

It is suspected that the very object of the colonisation scheme is at stake. The relative unsuccess of the adaptation to the South Andaman may be attributed to the following reasons :

- (1) Liberal facilities given to the new settlers have led them to misuse the money they received from the Government.
- (2) Selection of the settlers, obviously, was not satisfactory and some of them were not agriculturists at all.
- (3) Impact of the indigenous culture with that of the new settlers and clash of interests of the settlers with the local people

Adaptation in the Middle Andaman

The great success of colonisation in the Middle Andaman is observed in the good type of adaptation of these people. There is little difference in the physical conditions of the South and Middle Andamans but the basic differences arise out of the isolation of the Middle Andaman and absence of any indigenous settlement there. The people have been drawn towards the utilisation of land i.e. agriculture, fishing etc. which the colonisation scheme aims at.

The success of such an adaptation is due to the following.

1. The selection of the people was good and they were all agriculturists.

2. The people who settled in the Middle Andaman were thoroughly informed about the land not only by the Government but also by their own people who settled over the islands earlier.

3. Neither intrusion of people other than these settlers nor the movement of the settlers outside the Middle Andaman was allowed. This helped in making these people bent towards the building up their hearth and home only.

4. No impact with any other culture exists over the islands.

5. Definite geographical advantages.

But the settlers are reluctant to work as forest labourers in the off-time and if at all they do it, their work is not satisfactory. [The fisheries which can also be a subsidiary occupation of the people is hardly cared for. The causes of such response to all these avenues of employment are obviously due to the following factors.

1. The people are not accustomed to the forest exploitation and as such there is a natural reluctance of the people in doing so.

2. The fishing is hardly done because very few of the settlers are fishermen by caste. According to the social status of the people, as said previously, there is a division of labour in a village community being based on the caste system and this hampered in the utilisation of these resources.

The settlers in the Middle Andaman in contrast to those of the South Andaman, are found to develop into a peaceful gregarious unit with little trouble from inside as well as outside. Under such circumstances, the development of the land as well as the adaptation of the people there depend on the human qualities rather than on the geographical conditions. This does not mean that there is no problem regarding the conditions other than human quality but it means that these problems of the geographical environment can easily be solved through the little efforts of the people. These aspects of the colonisation problems and their probable solution have been discussed afterwards.

Adaptation of the people from Travancore-Cochin, Madras and Burma :

Very little has been observed by the author regarding the adaptation of these people but it is found that there is growing reluctance of the people from those states to settle in the Andamans. The quota for these people in every year is not filled up.

Twelve South Indian refugees who were uprooted from their holdings in the South Burma after the Karen Rebellion were rehabilitated in the

Shoal Bay region of the South Andaman. The uprooted families were given, Rs. 2,000/- for their rehabilitation in the forest region of the Shoal Bay and they availed of their shelter in the abandoned camps of the forest labourers. At first, these people were found to possess a good deal of enthusiasm in clearing jungles and doing co-operative agriculture. But within a very short time their enthusiasm gave way to quarrels and only 24 acres of forest land were cleared by them in one year and all their deposit money were exhausted in buying rations. Such a bad-adaptation in the resettlement of the people probably took place because of the lack of proper supervision.

SOME COLONISATION PROBLEMS AND THEIR PROBABLE SOLUTION

Problems are almost inherent in any type of undertaking and their normal work. The colonisation scheme of the Andamans, though drafted through a great deal of foresight, has given rise to a number of problems while the scheme is being executed. In spite of the good achievements of colonisation that have already been discussed one cannot be fully optimistic regarding it. The problems of the colonisation can be broadly grouped under the following heads.

- (a) Physical problems,
- (b) Social problems, and
- (c) Defects in the Government administration.

The physical problems arise out of the nature of topography, the soil, forest clearance and other consequent factors, and social problems are those arising out of the village life of the people, the nature of the village community etc. and the last are those which are purely due to the flaws in the government administration.

Physical Problems

- (a) The undulating nature of the land in the Andamans is exposed to a vehement soil erosion as the lands for settlement have been cleared and the heavy rainfall is accelerating the above problem. It has already been said that the half of the land allotted to one family lie on the hill slopes for the growing of fruits and the gentle slopes for paddy cultivation. The East Bengal refugees are not accustomed to

terrace cultivation as is needed in the hill slopes and hence the undertaking of such a type of cultivation cannot be practised without proper training imparted by the agricultural experts.

(b) The lands after forest clearance are studded all over by the stumps of the trees and they occupy a considerable portion of the total land cleared (25—50%). The thorough cultivation of the land is hampered to a great extent because of the presence of such stumps. It is believed that the presence of the stumps checks the vehement erosion of the already loose virgin soil. But such methods adopted can hardly allow the smooth ploughing of the lands and it is better, in such cases, to build up bunds all over the agricultural plots to check the creep of the soil. The controversy may arise that in such cases the ploughing of the fields by tractors cannot be made but it should be borne in mind that the agriculture is not of co-operative system but of the subsistence level.

Proper training of the type of cultivation under such physical conditions can be best given by the people accustomed to such cultivation in similar conditions. The Japanese are accustomed to such agricultural practices and their success in the agricultural improvement of the islands during the Japanese regime should be recalled and therefore, the Japanese method of agricultural practices should be adopted in the country.

Social Problems

These problems arise out of the social structure of the new people, their village economy, the efficiency of the people and besides these the problems consequent upon the superimposition of the culture of these people on the existing one.

(a) The Social structure—The social structure of the settlers is completely unbalanced. The balanced social structure is achieved when a society has developed all its necessary functional units for the perfect functioning of the whole body. This evidently envisages in the growth of a society in different compartments i.e. the growth of a producing class in agriculture, another doing cottage industries i.e. potteries, mat making etc. and the other doing fisheries and so on. The settlers had such a division of labour in their original villages wherefrom they have migrated. But in the Andamans, the villages of the new settlers consist of only agriculturists and there are no fishermen, no barbers, no priests and few educated people to form a balanced social structure.

The means of removing the trouble is to encourage necessary number of fishermen, barbers, priests, and middle class educated people to colonise in the land to form a stable social structure.

(b) The natural growth of a village arises generally due to its relative advantages for settlement, i.e. the presence of good water-supply, communication facilities etc. and consequent upon these factors, there is a growth in population in a village. But the villages in the Andamans are being developed in the midst of cleared lands which are to be cultivated. The population are first being settled and then all the requisites for a village are being met up. This type of development of villages demands foresight in its locational advantages—the advantages of water-supply, good prospects of facilities of communication etc.

(c) The settlers are uprooted East Bengal Hindu peasants. They are mostly illiterate. These people owing to their new endeavour of colonisation, have been given loans of considerable amounts of money and contributions of land and constant government supervision. Many settlers (specially those of the South Andamans) instead of utilizing this large amount of money, land and Government co-operation for constructive purposes, have become addicted to all sorts of vice and corruption. Quarrels between the villagers, complete destitution etc. have been a great menace to the successful functioning of the colonisation.

This random wastage of money in unfair means of livelihood can be easily checked by strict Government supervision. This problem can be overcome more easily by the efforts of groups of educated middle class who will be able to let the refugees understand the position in which they (refugees) are living and to show the way to a better approach.

(d) The land given to each family is actually greater than what is necessary for the subsistence of the family only. This excess in land evidently implies that these settlers can supplement all their other necessities through the marketing of the excess products. The market is evidently the town of Port Blair or the mainland.

Under such circumstances, the government must control the excess in agricultural production by ensuring safety of the settlers as well as an even distribution of the production.

(e) It is observed in many cases that the new settlers are supervised by the Government servants who are not acquainted with the customs and language of the people. This brings in misunderstanding between the people and the supervisors and hence the co-operation of the Government remains ineffective.

It is expected that the supervisors of the refugees must be conversant with the language and customs of the settlers.

(f) The age-group of the new settlers is very important. The family unit with a man, his wife and children, is too small to ensure the necessary attention of the land. Such families who settled in the Andamans, really find great troubles in carrying out the necessary activities. The smallest family unit should be of 5 members with at least one young man above 20 years of age besides the head of the family. In the present colonisation, the islands demand for young men and women.

Problems arising out of the Impact of the Indigenous and Imported Cultures

There is very little trouble arising out of the clash of interests and cultures of these people. In some cases marriages have even taken place between the refugees and the local people. But the "Andaman Indian Association" a social club of the local people, ventilates the grievances of the local people and submitted a memorandum to the States Reorganisation Commission suggesting that refugees from East Bengal should not be settled in the Andamans to disrupt the "homogenous community" of Andaman Indians. It has mobilised the minor groups of people i.e. the Mophlas, Tamils, Malayalees and Telegues by raising such a cry.

Such a resistance from the indigenous people is obvious and it is true that they possess a right over the land by their birth in the place. The compromise can be made through the sense of accommodation and no attempt of colonising the people at the cost of the local people should be made.

The "cultural homogeneity" of the local people exists in spite of the different languages prevalent among them. The different linguistic groups comprising the total, according to the 1951 census are as follows.

Table No. 7

Bengali	...	...	...	2363
Burmese	...	...	...	1584
Hindi	...	...	...	975
Malayalam	...	...	...	2815
Tamil	...	...	...	1573
Telegu	...	...	...	1044
Urdu	...	...	...	862
Hindustani	...	...	...	4139

In spite of the great diversity in languages, the unity prevails in culture and this has been particularly due to the same type of geographical environment that they have to encounter. In the Andamans the language has not stood in the way of the formation of cultural unity and the people coming from Bengal, Madras and Travancore-Cochin will not hamper the culture.

Defects in the Government Administration

(1) The forest-clearance—The clearance of the forests are being done by the Forest Department. But the operation work is far from satisfactory which is the result of a number of complex causes. One of the most important factors is the feeling in the Forest Department that the clearance of jungle for settlement of displaced persons and others is not its normal work. This has bred disinterestedness among many officers who have accepted the new role with reservations. There are arrears also in the final survey and distribution of land 'cleared' by the Forest Department. This type of indifference of the Forest Department in clearing the forests is necessarily because of its not being a normal work and in such case a separate body for the clearance of the forest is immediately needed.

(2) The cultivated lands producing rice and other commodities are frequently damaged to a great extent by the deer, elephants of the forest department, birds and pest. In Maimyo in the South Andaman a part of the rice field has been turned thoroughly into a desert by the pests.

For the prevention of such dangers, guards should be employed by the Government to prevent elephants from entering the fields and the deer menace should be controlled. The agricultural experts must be on the look out of the difficulties in agriculture and find means to solve them.

(3) It was promised by the Government that these settlers will be given 10 acres of land, 50% on the hill slopes and the rest on flat lands. In almost all cases, the promised amount has not been given and the plots of land that have been given to them are scattered ones. Obviously this creates great troubles for pulling on agriculture on all the plots, the distance from one plot to another sometimes exceeding half a mile. It is quite impossible for 2 working male members, on an average, in a family to cultivate all the plots of land which are so much separated from each other. At Monglutan, in the South Andaman, most of the new settlers suffer from these difficulties which is purely due to the inefficiency of the

Forest Department in clearing the expected amount of forest and of that of the Government in distributing the lands with little foresight.

(4) The cash dole of Rs. 15/- per adult and Rs. 10/- per child to a maximum of Rs. 60/- per month per family is not at all adequate because the new settlers are found to face many more problems in their agricultural pursuits immediately after their arrival in the islands than what was expected beforehand. The problems arise out of the inability of the Government to provide each family with 10 acres of land immediately after their arrival, unsuitable nature of land for ploughing because of the presence of roots of the trees all over the cleared land.

CHAPTER XII

AGRICULTURE

Andamans which upto the end of the 18th century were inhabited exclusively by the aborigines given to the primitive economy of hunting and collecting experienced the introduction of agriculture only recently. Still now the greater parts of the islands are under the deep mantle of vegetation and it is only in the areas of the discrete settlements that forested areas have been cleared for the introduction of agriculture. Very likely, the agriculture of any importance has developed only in the South Andaman in the close neighbourhood of the town of Port Blair. The production is for the consumption of the grower and it is not at all commensurate with the local demand.

Much like the other parts of the tropics, the development of agriculture to feed the foreign demand was a distinct feature of the early attempts for the development of agriculture in the islands. Though the paddy occupied the predominant position, the production of the plantation crops attracted considerable attention. But in most cases the early endeavours had nipped in the bud partially due to the physical disadvantages and also due to the lack of proper efforts and capital investment. Only next to paddy, the commodity of importance is the coconut. In spite of the physical separation of the islands from the mainland by approximately 800 miles, there was hardly any genuine interest on the part of the Government to bring about an agricultural self-sufficiency of the islands and very truly, the penal settlement of the islands did not give any incentive for the development of agriculture. The bad effects of the total dependence on the main land for the foodstuffs was appreciably realised during the war and the Japanese occupation. There were efforts for overcoming this disadvantage by the Japanese almost overnight by the introduction of agriculture to all the available areas, irrespective of the nature of their topography and also by the introduction of some crops which grow over the inferior soils. However, the efforts were lost to oblivion immediately after the Japanese had quitted the islands. True it is that the measures can hardly gain a good footing in the normal conditions. But efforts for attainment of self sufficiency can hardly be questioned. The enigmatic situation experienced by the highly advanced countries like Great Britain during the last World War due to the deplorable dependence of food stuffs on the foreign countries is being growingly overcome by making the countries

more and more self sufficient in agriculture. Self-sufficiency at the cost of optimum agriculture is no doubt uneconomic but for the islands like the Andamans, this is the only means of stabilising the economy of the islands.

The scheme of rehabilitation of the refugees of East Pakistan and its implementation have thrown open the opportunities for the development of agriculture. This permanent settlement attempts have improved the food production of the islands considerably and at times the lack of proper communication facilities stand in the way of sale of some vegetables and other perishable products.

Growth of Agriculture in the Islands

The forest lands around Port Blair were first cleared after the formation of the Penal Settlement in 1858 by forced convict labourers. During Colonel Tytler's tenure (1852) only 149 acres of forest lands had been cleared and cultivated. Within 3 years the area of cleared forests had increased to 724 acres of which only 353 acres were cultivated. As the number of convicts increased, the clearance of forest lands progressed proportionately. In 1870, during the time of Lord Mayo, many convicts were given tickets of leave and were encouraged to marry convict women with the idea of expanding the agriculture of the country. Indirectly though it was a stepping stone to agricultural progress, this policy adopted by the Government, was directly due to some troubles that the Government had to encounter. With the increase in convict population dependence upon food-stuffs increased and the perishable vegetables and other food-stuffs required immediate expansion. Under these circumstances, however, agriculture made a progress in the islands to the south of Port Blair. The area cleared amounted to 45,000 acres of which 12,000 acres were brought under cultivation for the growth of various crops. The agricultural population was as much as 7000 scattered in villages all round Port Blair. At the end of the year 1894-95, 22,306 acres of land were cleared, 10,140 acres of land were cultivated of which the Government plantations of tea, coffee, cocoa, coconuts and vegetables occupied 4,425 acres and the remaining land (5,715 acres) was cultivated by convict settlement. The Government plantations are worked by the convicts. Of the plantation crops, tea was the most important being cultivated over 585 acres and the production of tea in that year amounted to 121,641 lbs. of manufactured tea. Of this total production, 52,550 lbs. was marketed to the Burma Commissariat Department at the contract price of As. -/7/- per pound. Other plantation crops in the order of im-

portance are coffee (50 acres), cocoa (few acres), coconut palm (over scattered areas) etc. Sugarcane and a number of vegetables were also grown. Besides this Government sponsored agricultural enterprise, the convict settlers produced paddy and all their necessary food-stuffs for their own consumption. This type of slow progress is primarily due to the following reasons :—

- (1) The convicts who were given tickets of leave possessed no ownership of land but were tenants-at-will of the Government.
- (2) The Government did little to ensure the marketing of the excess production.
- (3) Many of these convicts were not agriculturists and under such forced economic conditions, they had to take to agriculture.

Evidently, under such forced conditions, agriculture could not develop successfully.

Since the second decades of the 20th century some fundamental changes in the agricultural policy of the Government were observed. In 1921, the declaration of the Government of India's policy for the gradual transformation of Port Blair from a convict settlement to a free colony made scopes wider for the development of local agriculture. Another landmark in the agricultural policy of the Government is the endowment of occupancy rights to the tenants who fulfilled easy conditions. 568 tenants were granted occupancy rights and this changed largely the indifference for agriculture of the peasants.

In 1927, the Agricultural Department was opened with an agricultural officer, 1 clerk, 1 fieldman and a labour gang of 10 men. In 1951, this Agricultural Department expanded considerably. Two agricultural stations, one coconut plantation, 1 coffee garden and 16 village demonstration plots were organised by the Department and good seeds from India and Burma were imported.

The free colony of the Karens was formed near the Stewart Sound and these colonisers, as they were accustomed to agriculture in Burma, made rapid developments in the agriculture. No produce is marketed out of their communities in the Middle Andaman.

According to the Revenue Assistant Commissioner of the Andamans, the total area under cultivation is classified as below : ¹

Table No. 1

			Acres
Paddy	...	...	4123
Sugarcane	...	...	97
Turmeric	...	...	14
Maize	...	...	4
Pulses	...	...	118
Melons and water melons	...	...	21
Vegetables and other fruits	...	...	367
Coffee	...	...	95
Tea	...	...	163
Coconut	...	...	3786
Rubber	...	...	276
Total cultivated land			9064
Grazing grounds			10630
Total cleared area			19694

The principal items of land revenue realised during this period are as follows :—

Table No. 2

			Rs.	As.	P.
Land rent	...	...	23,960	4	0
Coconut plantations	...	...	11,922	12	0
Coffee	...	...	1,518	0	0
House tax	...	...	3,451	0	0
Grazing tees	...	...	7,604	0	0
			Rs. 48,456	0	0

The coconut plantations yielded the maximum revenue to the Government amongst the crops. The acreage under crop production decreased (compared with the figures of 1894-95) because a large percentage of the Mapilla convicts, who were agriculturists, returned back to their native land. The rubber plantation, owned by the Government, was closed down due to the fact that the cost of production of rubber exceeded the market value and the tea-gardening deteriorated. Over and above this, the availability of jobs in the Forest Department and in other government concerns opened an avenue of employment for the people.

1. Census Report, 1931.

During the Japanese regime, the islands were completely shut off from other lands. With an unbalanced economy and with a great dependence upon food-stuffs on mainland, the Andamans had to develop her agriculture almost overnight.

The Japanese cultivated all the available land in the South Andaman including hillsides, where sweet potatoes and tapioca were grown.

From the memories of the people, it is learnt that self-sufficiency in food-stuffs was achieved and tapioca and sweet potatoes were introduced in a large scale in the diet of the people. No statistical information regarding the acreage and yields is available. But with the end of the Japanese regime, the lessons taught by the Japanese to the people were forgotten. The evidences of terrace farming on the hill-slopes and of large areas put under cultivation, but now abandoned, can still be seen in the neighbouring areas of Port Blair.

Present-day Agriculture

Since the independence in 1947, the conditions of agriculture in the islands have improved little. The Government has not paid due care to the successful development of the existing cultivated areas as it is more bent towards the rehabilitation of the islands. As compared to the 1931 figures, the agricultural pursuits of the people have decreased considerably. This is of course not true with the Karens who are still a self-contained unit producing every food-stuff they are in need of. But there has been a considerable diminution of interest on the part of the local-born population in the agricultural occupation. As has already been said, these local borns were initially given tickets of leave to develop agriculture of their lands, but since the formation of the Forest Department and different Government Offices, these people are gradually giving up their agricultural pursuits. Probably no measure has been taken to check such a change in the livelihood pattern of these people. In 1931, 40% of the local-born population were engaged in agricultural pursuits, but this percentage has come down to an alarming one i.e. 29% with old agricultural practices. The indications of the agricultural decline one fraught with further dependency on the food-stuff of the mainland. But the colonisation scheme has very finely saved the islands from further decay in agriculture and the schemes of the agricultural development due to colonisation command a separate study.

Distribution of the food-crops in the Andamans

The production and distribution of food crops in a country are determined by the physical, economic and social considerations of the land

and people of the region. In the Andamans the production and distribution of the food crops have a close harmony to all these factors.

The islands enjoy rainfall of 130" in the Southeast and more in the Southwest, and more than 60" in North with an annual mean temperature of 80° F. As such the agriculture is strictly of tropical nature with rice as the staple crop associated with pulses, oil-seeds, sugarcane, sweet potatoes, all kinds of vegetables, fruits *e.g.* papayas, pine apples, mangoes, oranges, bananas etc. and plantation crops like tea, coffee, rubber, cocoanut etc. Rice and coconut form the primary food-crop and plantation crop respectively. In addition to the above-mentioned agricultural products there are others, occupying only very small acreages, in the islands. What is evident from the above table is the prepondering importance of the plantation agriculture as compared to the subsistence types. This type of agricultural economy closely approximates that of Ceylon which, though congenial to the growth of a variety of food-crops, is primarily devoted to the cultivation of plantation crops *e.g.* tea rubber, cocoa, etc. In consequence of such an agricultural economy, Ceylon has to import about fifty per cent foodgrains of the total needs which even sometimes can be had with great troubles. As regards the plantation crops, the markets comprise the foreign countries and in neither of these crops Ceylon holds monopoly. This has given rise to great marketing troubles with years of great depressions. The Andamans offer a similar economy. Probably the cultivation of the plantation crops was taken up in the island because of their better yields and good marketing facilities. But in the background of the present-day self-sufficient regional economy, the above type of economy has its immense bad effects and this can be advised safely that in the islands so secluded from the main body such overimportance to plantation economy must be given up.

In the extreme south and the west of the south Andamans no cultivation is done because these are the regions where the Onges and the Jarawas live.

Subsistence Agriculture

Rice forms the staple crop of the islands. It has a wide range of cultivation from the sea-level to an altitude of 5000' and also over a wide range of rainfall conditions. In the Andamans rice is not grown in the higher altitudes and the 50' contour line continues to be the higher limit of rice cultivation in the country. In the South Andaman rice is grown in the longitudinal valleys, on the coastal regions and over scattered plots. Because of excessive rainfall irrigation is not at all necessary. The

soil is formed of a decomposed sandstone with considerable humus content because of the presence of dense forest cover before the clearance of the land. This type of soil condition is ideal for the growth of paddy. The acreage under rice is 3192 acres. The yield of rice per acre varies from 1000 lbs. to 2000 lbs. On the northern flank near Stewart Sound there is a chain of Karen villages viz. Pokhadra, Danapur, Barmadra, Latto, Webi and Base camp with luxuriant paddy fields of superior types all round these villages, very small quantities being grown on the hills and slopes. The average yield of these three types of land are given below:

Types of land	Hilly	Slope	Valley
Yields per bigha	4-5 mds.	8 mds.	over 12 mds.

The paddy is sown in the months of June, July and August and harvested from October to December. Paddy is grown once in a year. After the harvest the lands are devoted to vegetable growing in the months of January, February and March. If there is an excess of rainfall, the valley paddies are damaged, but the hill and slope paddies benefit by it. If rainfall is less, it causes no injury to the valley-fields but it injures the hill and slope fields because of the scarcity of water. Evidently as more than 90% of the cultivated area is in the valleys, the moderate type of rainfall is wanted by the peasants.

Tapioca

The production of tapioca and sweet-potatoes was first introduced by the Japanese when the islands were in need of self-sufficiency. The islands offer excellent physical conditions for the growth of tapioca because it can be grown with little care on rough undulations and hill-slopes. Small expenditure yields a surprisingly large amount of valuable food-material in the shape of its abundant edible roots.

Tapioca grows well in tropical regions with rainfall as high as 100" inches. Regular rainfall is helpful for the vigorous growth of the crop. Frosts are fatal and the best soils for its growth are the sandy loams. The islands have all the requisites for the growth of tapioca but at present almost no tapioca is grown in the islands. As the Japanese left the country, the people have also forgotten the cultivation of the crop which is really paying and can be a successful crop for the land use of hill-slopes in the neighbourhood of agricultural villages. This cessation of the growth of this crop is due to the fact that this crop is considered to be a famine crop which the people used to take with great reluctance in the Japanese regime.

Plantation Agriculture

Of the 6384 acres under crop, 3192 acres are under plantation crops which are equal to the acreage under rice. The coconut plantation comprises only of 2500 acres and this evidently proves the extreme importance of coconut in the country. The other plantation trees are rubber, coffee and tea.

Coconuts

All the necessary conditions for the successful growth of the coconuts are present in the islands. The combination of high temperate, rainfall, saline influence on the soil are best observed in the islands and the experiments in growing the coconuts even in the higher lands and on the hill-slopes of the islands have also been proved to be successful. The coconut cultivation needs comparatively little care in its growth and hence a greater area can be brought under the cultivation of coconuts by a peasant compared to that under rice. Besides this, the coconut can be easily marketed and fetch more money to the cultivators in comparison to other crops. These congenial conditions in favour of the growth of coconut have evidently led to a growing tendency of the cultivators, especially the local born ones, in devoting more of their land to coconut cultivation (see the distribution map of coconut cultivation).

The coconut cultivation is spread over in and around Port Blair, specially along the sea-coasts. The main problem of the coconut plantations is that the trees are sufficiently old at present to yield good quantities and qualities of coconut. The author had opportunities to see big plantation areas in the vicinity of Port Blair and at Long Island. In the former area most of the trees are old but in new areas new trees have been planted. The Long Island Coconut Farm is a fairly big coconut nursery and is owned by the Forest Department.

There are 50 coconut trees to the acre and each tree gives generally 24 nuts a year in the Andamans. The vast amount of coconuts that are produced in the Andamans can be profitably used for oil extraction, manufacture of oil cakes, making of coir yarn and mats (For further details see the chapter on Industry).

The coconut trees exert a direct influence on the lives of the village people because the tree provides with a number of their necessities. In this connection it might be recalled that the Nicobarese live a life based on coconut which may rightly be called "Coconut Life" and

even the gold standard in economy of the islands at present is replaced by "coconut standard".

At present 600 tons of coconut are exported from the islands to the mainland.

Rubber

The rubber trees grow successfully in the equatorial lowland areas. The requirements of the rubber trees are as follows:

- (1) Great heat with a mean temperature of 80°F and never below 70°F.
- (2) Heavy rainfall—80" inches and upwards with no period of drought.
- (3) A lowland situation, but with good drainage and deep rich soil.

The rubber trees grow well in the islands and at present its distribution is confined to the longitudinal valley of the Shoal Bay Creek. Near Bamboo Flat there is a rubber plantation area. But the condition of most of the plantations is very poor which is due to the negligence on the part of the owners. As the rubber is produced in many other parts of the world and, besides this, because of the production of synthetic rubber, the scope of the Andaman rubber which is not extraordinarily superior to that of other countries, is very much lowered down.

Coffee

The plant grows well in regions having abundant rainfall, temperatures ranging from 55°F to 80°F and high altitudes (2500'—5000'). Though the conditions are partially satisfied in the Andamans for the growth of coffee, it does not appear to do well. 50 acres of land were originally devoted to coffee plantation in the last decade of the 19th century and originally planted without protection of shade-trees. As such the plants suffered from leaf disease. Even at present, though grown under shade trees, conditions have not improved much. At present the acreage under coffee is only 100 and the main coffee plantation centre is at Dhanî Khari where Liberian variety is grown.

Tea

Tea appears to do fairly well in the Andamans. The rainfall is considered to be insufficient and the bushes suffer very much in the dry season. At present the acreage under tea is 163 as against 585 acres in 1894-95. The plantations are in the longitudinal valleys of Shoal Bay

Creek. Important plantations are in Kalatang, Wrightmayo etc. The conditions of these plantations are really very bad. Little care is taken by the cultivators and the tea gardens are full of foreign growth. Besides this, cocoa, which used to be grown before hand, is no longer cultivated.

A number of fruits such as papayas, pine-apples, oranges *etc.* form a part of the village agricultural economy and is grown for the peasant himself though these fruits can be grown widely in the islands.

The Agricultural Areas

All the agricultural areas lie in the South Andamans except the very few acres of land in the north of the Middle Andaman. The economy of all these areas are all of similar type with rice as the basis of culture. Besides this, every area produces something of everything which is definitely a direct outcome of the communication difficulties and hence little exchange can be done. The areas in the South Andaman are as follows.

Longitudinal Valleys

- (1) It is a longitudinal valley in the Southeast of South Andaman which is about 5-6 miles long and 1/2 mile wide, but widens more than 1 mile in the southern region along the coast. On both sides of the valley are longitudinal mountains. To the east of the Mt. Harriet Range, whose ridge line is as high as 1000' feet and in the west lines an unnamed range rising upto 500' feet. Along this valley longitudinal streams flow.

Little cultivation is practised above 50' contour line. Rice is grown fairly well. Tea is grown on the hill-slopes north of the Wrightmayo. Rubber in the southern part of the Valley and coconut in the southern coastal regions, specially south of Bamboo Flat.

A number of villages have grown up and those are mostly peopled by the Mapilla peasants. The villages from south to north are Bamboo Flat, Stewart Ganj, Wimberly Gung, Goplakapang, Mallapuram, Wright Mayo and Kalatang. The people are engaged in agriculture and in the coastal regions in fishing and trade.

- (2) The longitudinal valley along the Jarwakhari.

It is 4 to 6 miles long and 1/2 to 1 mile wide. In the west lies the Cholunga Range rising to 500' and in the east an unnamed one which also rises to 500' feet. The cultivated areas are all along the river-courses and here also the 50' contourline is the higher limit of agriculture.

This valley is not so much peopled as the former one. It is mainly inhabited by the Bhandus, who, originally a criminal tribe, have, "under adequate supervision and with the chances of economic security as settled cultivators,.....given way quite smoothly to settled agricultural life."¹ The villages from south to north are Hopdaypur, Tusomabad, Cadell Ganj, Aniket, Ferrar Ganj, etc. This region is in comparative isolation from the other groups.

- (3) Another important longitudinal valley, 2 to 3 miles long and 1/4 to 1/2 mile wide lies in the Southeast of the South Andaman and through this valley Dhanikhari, the longest river of the South Andamans with one of its tributaries flow. Here also 50' contour line marks the limit of cultivable lands and rice, vegetables and other crops are grown over this area. The valley has immense scope of lateral expansion because of the gentle rise of the land on both the sides of the valley and at maximum it rises only 250' feet. Villages are few and they are Homfray Gang and Monglutan. These villages are settled by the local-born people (At present refugee-settlements have grown up in this area). Market-gardening is obviously important because of the great demand in the Port Blair. The vegetables are transported to Port Blair either by the service buses which go to Port Blair in the morning or by the human labour.

- (4) Just south of the Port Blair town lies a fairly long longitudinal valley and the cultivation is carried on only along the narrow strip on both the sides of a river. Agricultural farms are typical in the area inhabited by the local-born population of the Andamans. Villages from South to North are Protheropur, Austinabad, Lamba etc. Here also great emphasis is laid on vegetable gardening. Poultry farming is associated with every peasant farm.

Coastal Regions

Besides these longitudinal valleys, cultivation has spread on lands on the coastal regions. In the coastal tracts of Port Blair itself e.g. Phoenix Bay, Janglighat etc. agriculture is carried on and the agricultural farms

¹ Geog. Review of India, September, 1952..... S. Sinha.

are owned by the Agricultural Department of the Andaman Government. In Janglighthat, which lies almost at sea-level, experiments with different crops are done. The most important agricultural region is around the Flat Bay and the Malta Bay, where the same type of agricultural scene is found as in the other areas. In a small area, in the coasts of Constance Bay also agriculture is carried on by the Burmans.

What becomes evident from the study of the layout of the agricultural areas is that agriculture is carried on only in the flat plains, never rising above 50'. Every valley is river-fed and the dependence on the rivers is particularly felt because they constitute the only source of water supply as little well-irrigation or any other type of irrigation is practised in the islands. There has been many limiting factors in the distribution of agricultural areas.

- (1) Agriculture could not expand in the extreme south of the South Andamans inspite of its congenial physical conditions because this forms a part of the Onges territory. Similarly, in the coast of South Andaman also, agricultural practices were prohibited for the inhabitation of the Jarawas.
- (2) The agricultural population were not taught the methods of dry farming on the hill-slopes which is so abundant in every village farm. This has obviously led to the agricultural practices to be confined below 50' feet contour line.

Present-Day-Agricultural Problems

The problems of the agriculture in the Andamans are not so much due to physical conditions as due to social and economic conditions.

The physical problems are erosion due to the excess of rainfall and the topography, especially in areas which are bare of vegetation. Menace of deer also is no less a problem with the peasantry and, as learnt from personal enquiries, this is the most disturbing problem.

As already analysed, there is a constant influx of the local-born population from agriculture to industry, forestry, trade and Government jobs, which has created a rapid deterioration in the agricultural economy of the country. Had there been a wastage of human labour in the agricultural fields due to the excess of population engaged in this occupation, such a change in the livelihood pattern of the people would have been a blessing to the islands. But, unfortunately, in the light of the agricultural dependance this change is in no way an index of improvement.

The Land Tenure Laws of the islands are also defective and ought to be changed. Laissez-faire policy in the utilization of land by the peasants gives rise to great troubles as is the case in the production of plantation crops which are not primary food-stuffs. Mr. Shivdasani opines that "for the Andamans rules will be required for horticulture and prohibiting the growing of certain crops which are not food crops. Provision will have to be made to ensure that in course of time the Zamindari system does not grow up. Cultivators should, for all intents and purposes, be proprietors of the land which should be heritable and transferable, but limitations will have to be so imposed on transfers and sub-leases so as to prevent a cultivator from acquiring in course of time so much land that his sub-leases become the real tenants and he becomes a landlord paying a tax to the Government. Though in order to give a feeling of security to the cultivators it would be desirable to introduce such a term as *Mulik Kashtkar* instead of occupancy tenant it should be at the same time made perfectly clear that the ultimate proprietary right in the lands rests on the State and that this right has been given away in perpetuity on certain conditions.....without such safeguards we shall in course of time be creating a class of persons which we are at pains to abolish in the rest of the country."

In India we find an agricultural class which has developed great skill and dexterity in the occupation through their age-long evolution. But in the Andamans, the agricultural community has been formed by the integration of peoples who had different occupations originally and somebody having no idea of agriculture at all and as such these people have not achieved perfection in their occupation, neither do they possess a great liking for the occupation except the Burmans, the Karens, the Mapillas etc.

The Government has also not been very attentive towards the agricultural progress of the country and in consequence the marketing of the excess products is extremely difficult. This has evidently led to a shrinkage in the cultivated areas and in consequence in the production of those food-stuffs which cannot be marketed easily.

The colonisation scheme and its implementation invoke fresh lines of enquiry regarding the prospect, progress and problems of agriculture.

CHAPTER XIII

ANIMAL HUSBANDRY

Andamans possess livestock which are far below the need. There is enough grazing ground in these islands for the provision of a larger number of livestock. In 1931 there were 10,630 acres of grazing grounds and the number of cattle was as much as 10,278.

Bullocks	...	...	1771
Cows	...	...	2092
Cow buffaloes	...	...	1332
Bull buffaloes	...	...	868
Bull calves	...	...	1222
Heifers	...	...	1309
Bull Buffalo calves	...	...	788
Buffalo heifers	...	...	896

To improve the breed in order to produce better animals for draught purposes and increase the production of milk, fresh stocks were imported in the islands from time to time. The present total number of cattle in the Andamans is a little over 4300. The milch cattle number about 450. Murrah buffaloes, Shaiwal, Sindhi and Haryana cattle do well in the islands.

The health as well as the milk giving capacity of the cows in the Andamans are very poor. Though the climate is quite suitable and the grazing grounds are quite good, the only cause of the poor health and milk giving capacity is believed to be due to the lack of proper food.

The cattle of the Andamans are free of contagious diseases but Dum Dum sore is the chief disease of the cattle in the islands.

For the development of animal husbandry in the islands following measures must be taken.

(1) Animal husbandry plays a very important part in the farm economy as the cows produce milk, the bullocks drive the ploughs and the droppings of these animals serve as fertilisers or fuels. But in the Andamans, the importance of livestock in the farm economy is very little. The Department of Animal Husbandry should try to provide the agriculturists with cattle and try to make them cattle-minded.

(2) Nutritious food should be given to the cattle. Now-a-days

ordinary grasses and hay form to be their food but besides this, oil-cakes and other fodder crops should be introduced. "The establishment of an oil mill advocated under Industrial Development should help by making oil-cake available. Along with this it will be necessary to grow suitable grasses and fodder crops, properly maintain the pastures, and prepare hay and silage. The main function of the Government dairy farm should not be the supply of dairy products but proper research and breeding."

- (3) As the Andaman cattle are free from disease, any cattle, whenever suspected, should be sent to an island specially exclusively reserved for unwanted livestock. This will keep the cattle standard of the country quite high.

POULTRY FARMING

In all villages, poultry farming is very popular and every house has got its own farm. Its popularity is due to the fact that almost no other type of meat is available in the country and the great number of muslim population of the country, are generally fond of poultry farming. The main problem of this farming is that the fowl cholera takes a heavy toll every year. To overcome this problem, Government should send experts to the farms for proper investigation and amelioration of that.

Deer is a late introduction into the forests of the islands and at present the number of them has multiplied so much that killing of deer is unrestricted. Venison is an important item of diet of the people in these days.

FISHING

The fish fauna of the Andamans belongs to the vast and incredibly rich Indo-Pacific fauna that has its centre of distribution in the adjacent East Indies.¹ The islands are considered to be the western outpost of the East Indies. The great richness of fauna in the Andamans is continued to the Andaman Sea which is a shallow sea enclosed by the Andaman-Nicobar ridge on the west and the Burma-Malayan landmass on the east. The fishes of the sea have been collected and studied by Blyth, Day, Alcock, Hora, Mukherjee etc. As many as 490 species of fishes have been collected from the coastal sea and deep seas and they are not only numerous in variety but also in quantity. A catch of 200 tons of fish in a day has been recorded. The causes for such a great variety and quantity of fishes

¹ A list of Fishes of the Andaman Islands Albert, W. C. T. Herre, Mem.
Ind. Museum, Vol. XIII, Part III, 1941.

are because of the great movement of the planktonic fauna and the shallowness of the sea basin. Of the great varieties of fishes the coastal ones are of more importance because most of them are food fishes. But the deep-sea fishes which are mostly not food fishes are unimportant because they are of little economic value. The coastal fishes are sharks, skets, herrings, sardines, cat fishes, eels, murels, Indian Salmon, Bombay Duck etc. and those of deep sea are perches, mullets, shoal fishes or flat fishes etc.

The place of fishing in the economic resources of the islands is followed by forests and coconut plantations. When compared to lumbering and coconut plantation, the fishing industry is almost non-existent. Fishes are caught by the people for their own requirements and this has rarely expanded to marketing stage. According to 1931 census, only 5 persons of 625 local-born earners were engaged in the pursuit of fishing. Besides this Mapillas, Burmans and Karers do coastal fishing for their own requirement. Inland fisheries are not at all prospective because a very few fishes are found in the freshwater streams. Obviously, the inland people have no fishing occupation though of course the sea is not more than ten miles from any place in the islands. The fishing is done by long narrow boats and catches are made from within 2-3 miles from the coast. The scarcities of fish supply is felt in the Port Blair and the interior villages where it is sold at higher prices.

For the prospecting and development of fisheries in the islands, a large organisation called the Andamarine Development Corporation was created. But the corporation failed to carry out the investigation properly and according to Sri Shivdasani the reasons appear to be that (a) capital stopped coming in, (b) funds were wasted on craft too small and improperly equipped for long journeys in the sea, (c) failure to provide necessary cold storage before attempting large scale operations and (d) failure to study local conditions and the position of the best fishing areas before incurring heavy expenditure. In spite of the failure of this corporation both deep-sea and coast-sea fishing should be encouraged. The deep-sea fishing cannot be done by individual fisherman and as such the Government itself should organise the deep-sea fishing and the coastal fishing may be taken by the fisherman. The very little development of fishing in the islands are due to the following reasons :

- (a) In the Andamans, almost no fisherman by caste is found and as such very few people ventured to take up this occupation.
- (b) The agricultural people in the islands originally used to catch their own requirements and in course of time, many of them have been drawn in Government jobs, forestry etc. In

consequence, a fairly large home market for fishes has been formed but the supply is not yet upto the demand.

- (c) Other avenues of employment e.g. forestry. Government services, trade, commerce etc. were preferable to fishing because the former occupations brought more money at home and also were considered as more dignitary jobs.

It becomes evident that fishing has great scopes in the islands because of the presence of rich fishing grounds in the Andaman sea' and the demand for fishes both in the islands and in the mainland, specially in fish-hungry Calcutta is huge. Hence for successful growth of the fishing industry all possible efforts must be exerted.

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1. The exact locations of the best fishing grounds have not yet been determined.

CHAPTER XIV

INDUSTRY

The industrial prosperity of a country is dependent primarily on her raw materials, mineral resources, power supply and market. Of all these necessities Andamans possess a few. The main raw materials of the islands are forest woods, coconuts and sea treasures. With almost no mineral resource and no indigenous source of power, the islands can hardly succeed to develop heavy industries and the only possibility lies in the development of cottage industries where man provides the necessary power for the industry. As there exists little co-existence of cottage industry in the agrarian economy of the islands, specially in the case of the Andaman Indians, people flocked to Port Blair for some other source of employment. Had cottage industries been introduced in the Andamans (with proper facilities of marketing) the industry would not only have experienced progress but also the agriculture would have gained a stable footing. The cottage industries in the agrarian economy provides the agriculturists with an additional means of earning money and a rational way of utilisation of time of the women folk. The scope of heavy industries is almost completely limited because the islands possess neither the ferrous or non-ferrous metals to an economically exploitable extent according to our present knowledge, nor any source of power except the wood of the forests. Besides these, the home-market is almost negligible and also in future with her optimum population there would not be an appreciable increase in the home-market so as to initiate the impetus for the development of a "market-localised" heavy industries.

INDUSTRIES BASED ON FOREST PRODUCTS

Lumbering constitutes the most important industry. The other industries are coconut industries and other agricultural industries and industries associated with the sea treasures.

The history of the growth of industry in the islands is one of stagnation. The forestry is the only industry that has expanded considerably. (The working of the forests has been dealt in Chapter V). The expansion of this industry was possible only because Andamans have a great market not only in Calcutta and Madras but also in London. Her monopoly in

some valuable timber (e.g. padauk, garjan etc.) has led to the growth of these markets.

Saw Mills

The essential part of the industry is the sawing of the logs to get it ready for transport. The biggest saw-mill in the Andamans and in India also is the Chatham Saw Mill owned by the Forest Department. Modern mechanised processes of sawing are introduced in the mill. The position of the saw mill is in the Chatham Island (2.5 sq. miles) north of Port Blair and connected with it by a beautiful wooden bridge. The Chatham Island is the port of the Andamans. The logs are brought from regions of forest exploitation to the port by the big boats of the Forest Department and the logs are cut according to the contracts. After this the wooden planks are sent overseas. The Chatham Saw Mill, though the biggest and most modern in type, cannot cater to the total bulk of demands. The only other saw mill in the Andamans is at Janglighthat in Port Blair owned by a Bengalee private enterprise. The mill caters to the demands of the Andamans, particularly timber for the construction of wooden houses. The mill used to export to the mainland, but has stopped it considerably because of the competition of the Forest Department and transportation disadvantages. Besides these two mills, no other saw mill has been established in the Andamans.

Mr. Shivdasani writes "The Forest Department mill at Chatham or the expected new saw-mill at Bonington need not be concerned with cutting short lengths of planks and boards below 1½" in thickness. It may not be economical for them to do this work on account of the size of their saws. Therefore, a Turney and small saw mill using small sized timber and scarp and converting the same into such commodities as half wrougths for other trades, packing-case boards etc. would relieve the big mills and also prove profitable. It will also not interfere with the present timber trade of the Forest Department. The cost of such a mill would be about 2 lakhs."¹

In the present days of colonisation, the need for wooden planks would expand for the construction of a large number of houses. If all these planks are to be sent to the regions of colonization, obviously it would create difficulties in transport and cost. Hence saw-mills should be opened up in all the regional centres where the colonization is going on.

¹ Shivdasani, H. R.—Report on the possibilities of colonization and development of the Andaman and the Nicobar Islands, 1949.

Match Factory

A match factory has been established by the Wimco in Port Blair. It lies just in the northern tip of the Port Blair. It makes splints and veneers for the match boxes. There is further scope for establishing other match factories in the islands and it is expected that an Indian company should put up such a factory, the estimated capital required being 5 to 6 lakhs.

Wooden Articles

Wooden goods of quality being small in quantity, such as toys, collapsible furnitures, luxury goods, walking sticks etc. have got good scopes of development. Now-a-days, cottage industries on the basis of forest products are almost absent besides a little done by a few Burmans and Andaman-Indians in Port Blair. Limited number of walking sticks and furnitures can only be had in the Port Blair market, but not at a cheap price. Such a deplorable condition should be changed and the making of wooden articles in the term of cottage industry can be introduced in the agricultural economy of the country. There is quite a good demand for all these luxury goods in the towns and cities of India and is evident from the demand of the Japanese goods.¹ The wooden goods should be of small size and attractive in quality so that they can withstand the high charges of transportation. Canes can be easily exported to Calcutta for the making of baskets, furnitures, Umbrella-sticks etc. In jail, making of cane furnitures was a highly specialised industry, but it is almost ruined.

It has been advocated by many people that boat, shipbuilding and paper-pulp industries should be started. The former industry, in the present day, needs more iron and steel plates than wooden planks and hence the Andamans possessing only wood do not necessarily provide the requisites for the establishment of these industries. The raw material of paper-pulp is bamboo but in the Andamans the bamboos are of inferior quality.

INDUSTRIES BASED ON COCONUT

A number of products can be manufactured from the coconut. In the Andamans coconuts form the second most important wealth. Coir yarn, mats, coconut oil, oil cakes, broom sticks and a number of other things can be manufactured from the coconut.

¹ No other country can possibly sell things at such a cheap rate like Japan.

Coconut Oil Mill and Oil Cake

Mr. Shivdasani has made a very good survey on the possibilities of establishing a coconut oil mill. The oil would not only meet up the local demands but also can be exported to the mainland and the oil cakes can be profitably used as fodder of the animals. At present there is no coconut mill in the islands of any appreciable size. The enquiries made by Mr. Holmes regarding the development of an oil mill is as follows :

"I was informed in Port Blair that there were 3500 acres of coconut plantations. There are planted 50 trees to the acre and each tree should give 24 nuts a year. If this is so the crop would be not less than 40,00,000. Taking 320 lbs. of copra for every 1000 nuts the annual production should be 575 tons of oil and 230 tons of cake. I have been informed in Calcutta that the total cost of converting copra into oil and cake is Rs. 6/- per maund or Rs. 162/- per ton. I have also been given the following prices :

Copra	...	...	Rs. 900/- per ton
Coconut	...	...	" 200/- "
Oil Cake	...	...	" 140/- "

At these rates the results from 575 tons of copra should be—

345 tons of oil at Rs. 2000/- per ton	...	Rs. 6,90,000	0	0
230 tons of cake at Rs. 140/- per ton	...	" 32,200	0	0
	...	Rs. 7,22,200	0	0
Less cost of copra at Rs. 900/- per ton	...	" 5,17,500	0	0
	...	Rs. 2,04,700	0	0
Less cost of pressing	...	" 93,150	0	0
		Rs. 1,11,550	0	0

This means that 525 tons of copra costing Rs. 35/- per maund or Rs. 900/- per ton show a profit of Rs. 1,11,550.

The estimated capital expenditure on a drying plant and mill of a capacity sufficient to work double the amount of copra is Rs. 1,25,000/-. So on these figures a profitable business could be done. I am in a position to criticise the figure given for the cost of pressing but I should also like to note on the cost of copra prepared in the Islands. I think the figure of 40,00,000 of nuts producing 575 tons of copra to be correct. I do not know what the cost of husking, breaking and removing

the flesh of 40 lacs of nuts is likely to be, but imagine that Re. 1/- per hundred should cover the cost.

I estimate that the planter should be contented with Rs. 8/- per hundred for the nuts, so cost of the 575 tons of dried copra should be as follows.

40,00,000 nuts at Rs. 8/- per 100	...	Rs. 3,20,000.
Breaking and drying at Re. 1/- per 100	...	" 40,000.
		<hr/>
		.. 3,60,000.

which equal about Rs. 650/- per ton.

This would reduce the cost of the copra in our previous figure by Rs. 250/- per ton or Rs. 1,43,760 for the 575 tons and increase the profit to Rs. 2,55,300. There is too much of doubt in the number of nuts (40,00,000) which is thought to be an overestimate. Even if the Andamans produce the amount of nuts as estimated by Mr. Holmes, the profit would be far less than that what is calculated by him by the simple method of the rule of three. Mr. Holmes has made no calculation of the transport cost which the author believes should be thirty p.c. of the selling cost. In spite of this the oil mill industry is a profitable industry.

Coir Yarn and Mat

Coir yarn and mat making also constitute important parts of the coconut industry. At present it is very undeveloped and such practices are done only by a limited number of Burmans and Andaman Indians. From the above calculation, we find that there are as many as 40,00,000 of coconuts and the husks of these coconuts can be profitably used for the above industries. There is a very great demand for coir rope in the Forest Department alone in the Andamans and at present coir ropes worth 1 lakh of rupees are imported from the mainland by the Forest Department. Hence the establishment of such industries can be highly advocated. A small coconut farm in the Long Island (Middle Andaman) owned by the Forest Department is experimenting in making coirs in a very limited scale.

The process of manufacture of coir making is very simple. The husk of the coconut is first dried in the open air which takes 45—60 days, dependent on the type of the weather. From the dried husk the fibre is extracted by beating the husk with mallets and is spun into yarn either by twisting in the hand or by means of a charka type contrivance. In the Long Island farm the charka type contrivance is prevalent.

For the home demand as well as demand in India, the coconut plantation should be practised in every possible part of the islands.

INDUSTRIES BASED ON THE SEA PRODUCTS

The Andaman Sea, as already discussed, abounds in a number of fish fauna (See Chapter XI, Fishing) and hence the catching, collecting, drying, processing and packing industries of the fish products can be very easily opened up.

A variety of sea-shells are also found in the seas of the Andamans. The collection of shells for button-making, luxury articles and ornaments was previously done by a few Japanese and Chinese people. They used to collect "*Torchus Niloticus*" and "*Turbo Marmoratus*". "The Japanese.....used to sell them to the Chinese who sold them back to Japan for button making and other allied industries. The reason for this double dealing was that the Chinese used to collect superior shells in other parts and the Andaman shells, which are believed to be inferior being too brittle, were brought by them for mixing with other shells."¹ No record of the amount of shells collected by these foreigners in the pre-independence days is available. This shell fishing has grown into importance in the Post-independence days and the foreign elements are no longer given license to collect shells in the Andaman Seas. A few Indians have been given licenses to harvest shells in the seas. The most important shells are the two types already named whose collection was about 230 tons during 1954-55. "One ton of torchus or turbo consisting of about 2500 shells fetches Rs. 4,250/- at the Port of destination."² The torchus shells are used in the manufacturing of pearl buttons and other goods of high commercial value and the turbo is for lucrative ornaments, buttons, buckles, table lamps etc. Other types of shells can also be collected and they are a number of pearl shell bivalves, *Chicorens Tamosus* (*Murex*) for the making of *Sankhaw*, shells of sea tortoise for making beautiful combs, buttons, cigarette cases and jewellery boxes. In the pre-war days the local Burmans used to manufacture all these articles which have got great demand in Europe. One of these shells is priced at £ 300 as raw material in foreign markets. Besides these shells, beautiful corals can also be collected in large quantities.

1 Sen Gupta, Benu. Andaman Sea treasures, A. B. Patrika, 31st July, 1953.
2 Herre Albert. W. C. T.—A list of fishes known from the Andaman Islands, Mem. Ind. Museum, Vol. XIII, Pt. III, 1941,

The shells have got a great demand in the U. K., the U.S.A., Japan and in India also. If proper investigation is done regarding the presence of the rich ground and proper arrangements are made for getting pearl fishermen, possibly from Ceylon and Japan, this industry is sure to develop into one of the most flourishing ones in the Andamans.

Even to-day large quantities of shells are caught illicitly and taken away by the Chinese poachers. They possess very swift-running vessels and in cases when they come under the direct notice of the Andaman Government very little measures can be taken as the Government does not possess any fast going vessel to catch these Chinese poachers.

Salt

Indigenous salt is manufactured by the Karens in the Stewart Sound by boiling the sea-water for their own consumption. Forest woods are collected for boiling the sea-water. This industry is essentially a cottage industry. Besides the Karens, the salt consumed by the people of the Andamans is imported from the mainland. In the middle of 1947 a salt survey was carried out in the Andamans by the Government of India and probably no decision has been taken by the Government for the setting up of such a factory. The large-scale manufacture of salt in the Andamans by the solar evaporation method is very difficult because of the rains almost throughout the year, and overcast skies. The islands should be completely self-sufficient in salt requirements as it form a very important part in the diet of man. Dependence for these bare necessities on the mainland which is quite far off from the island, cannot be allowed. Therefore, the manufacturing of salt in cottage industry form should be introduced in the villages or private enterprises should be at work.

Lime Burning

In the olden days the lime burning was in vogue for the construction of houses. The raw material was the coral and the forest wood provided the fuel. But now-a-days, the lime-burning industry has ceased to exist because wooden houses are being built up in the Andamans lessening the demand for lime.

Fruit-Making Industries

No fruit-making industry has ever been attempted in the Andamans. The islands produce papaya, oranges, bananas and pineapples. The first three can be exported only in refrigerating system and the pine

apple, which is of exceptional good quality, can easily be canned for being exported to India. Unless the refrigerating system in the transport is developed the fruit industries cannot be developed fully. In this connection it may be said that the islands have a great potentiality for producing excess of fruits because 50% of the lands of the colonisers are on the hill slope, which is best suited to fruit production.

INDUSTRIES BASED ON PLANTATION CROPS

It has already been said that except coconut, (which has been dealt separately), coffee, tea and rubber industries are dying out. The causes of decline are not the exceptionally good quality of all these products. In the earlier days all these industries were owned by private sectors and in face of competition there is no chance of expansion and at worst of survival. A rubber factory is situated at Bamboo-flat owned by the P. C. Roy & Co. The factory produces only rubber sheets which is not at all of good quality to compete with the rubber goods of India. Hence there is very little possibility of the growth of these industries in the Andamans in future.

SOME POINTS—BEARING ON THE INDUSTRIAL DEVELOPMENT OF THE ANDAMANS

The people even in the olden days had some knowledge, though not accurate, of the great forest, coconut, sea and other sources of wealth of the islands. In spite of this there was very little response from the private sector for exploiting these resources and utilising them. These may be due to Government policy as well as very undeveloped type of transport and communication. Even in these days, no great enthusiasm is found in establishing industries in the islands. To overcome such an awkward situation, the island must have more roads, more boats and also regular communication facilities with the mainland. This obviously envisages a huge expenditure of money. It is the task of the Government to do all these construction works immediately and this will definitely restore a confidence among the private sector. The growth of industries in a country naturally implies the growth of her wealth and, in consequence, improvement in the economic life of the people. It is often argued that the prominence of the private sector in the economy of a country will lead to evil effects of ill-distribution. The three big sources of wealth and their associated industries should be owned by the Government because they are expected to constitute very big enterprises. If they are owned by the private sector, a major part of

the country's wealth would accumulate in the pockets of the owners as against the chances of improvement that the country can expect from the money if owned by the Government. The small-scale industries, namely salt making, fruit making, lime burning etc. should be left to the private enterprise because of the fact that these are small scale ones which can be best run by private enterprises. If, on the other hand, these small scale industries are run by the Government, it would be highly uneconomical because of a top heavy type of administration. The main market of the finished products lie mainly in the mainland, which is more than 700 miles from Port Blair. In the light of such a great distance of market and the producing centre, the finished products should not be bulky but should be less bulky and of high quality because they can stand the cost of transportation and limited space in the ships. Hence the furniture making industry, which has got immense scope of expansion, cannot develop.

The basic industries like the ferrous and non-ferrous industries, chemical industries etc, have no scope of development in the islands. The raw materials and the power are almost absent with no market at all. This evidently means that there is no scope of development of these industries. Such is also the case as regards the cotton-textile industry, cotton being a nonweight-losing material can be introduced as a cottage industry in the country. Until more ships run in this line, such industries can not be established. It is also beyond doubt that these industries, if developed, would have a very high cost of production.

CHAPTER XV

TOWNS AND VILLAGES OF THE ANDAMANS

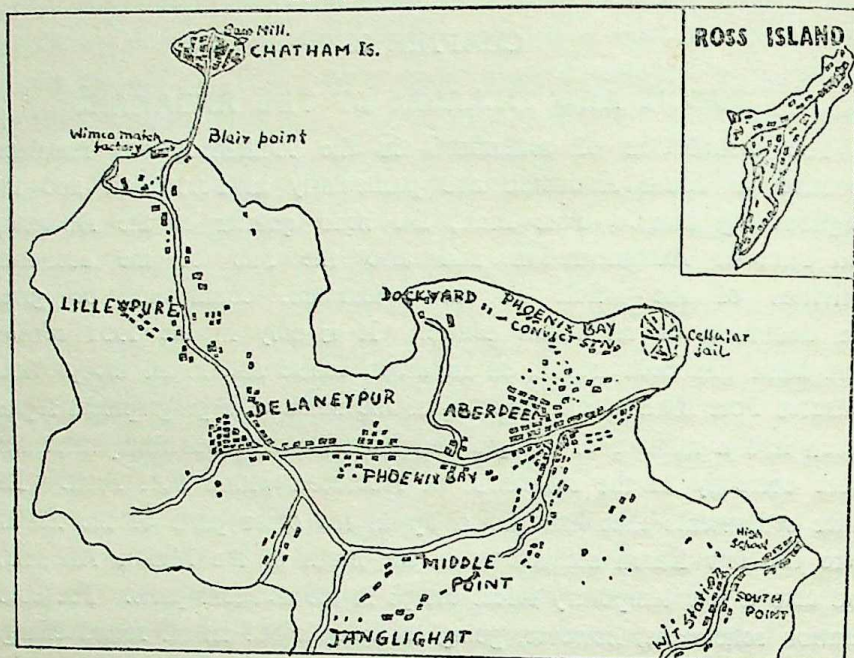
The distribution of settlements in the Andamans has remained confined in South Andaman and particularly in Port Blair and the neighbouring areas. Port Blair, the head quarter of the Andaman and Nicobar Administration and also the hub of the economic activities of the whole of the Andamans, could not be given the definition of an urban centre. It is only in the 1951 census, Port Blair has been treated as an urban centre and in all the previous censuses Port Blair was considered as the name of a geographical region which had a number of villages and the administrative headquarter was more correctly in the settlement of Aberdeen within Port Blair. The other settlements that had grown up in the other parts of the islands were the few Karen settlements in the north of the Middle Andaman and also a few temporary forest camps in the different parts. The colonisation scheme is, however, going to bring about an all round change of the settlement pattern and the new settlements are growing up in the different parts of the islands. Shortly, as is well within view, Mayabunder in the headquarters for the North Andaman will rise to the prominence of an urban centre with the rapid pace of human activities in the North and Middle Andamans.

TOWN OF PORT BLAIR

The situation of Port Blair is in the south-eastern part of the Andamans which is 780 miles from Calcutta, 740 miles from Madras, 390 miles from Rangoon and 120 from Car Nicobar. The selection of the spot which is relatively distant as compared to the other parts of the islands from India was made in the year 1788 and was named as Port Cornwallis, after the name of one of the 3 investigators who came over to these islands to investigate into the possibilities of the establishment of a penal colony. Such a selection was partly due to the physical conditions as it provided a very good harbour for the facilities of building up a port and also for being situated in the east coast which had saved this area from the direct impact of the south-west monsoon winds. In 1792, the settlement was transferred to the north-east harbour (now Port Cornwallis) but had to be abandoned (see ch. II page 5).

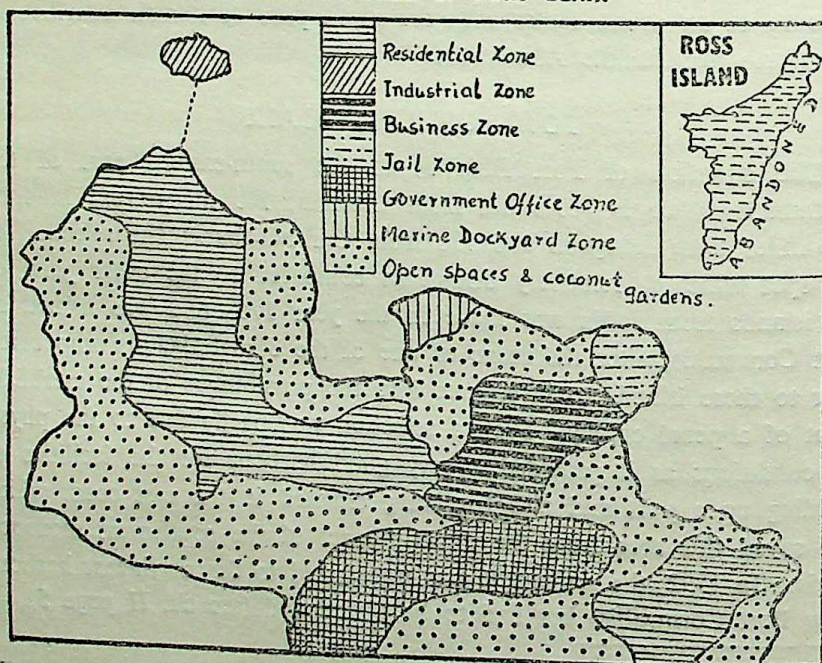
1. For details see ch. II.

TOWNS OF PORT BLAIR



(Only the important roads are shown)

FUNCTIONAL ZONES OF PORT BLAIR



The town of Port Blair was first to be settled by the people from outside and afterwards a dispersal in population was urged which necessarily created a number of agricultural villages. Hence the villages in the Andamans are all located in the South Andaman in and around Port Blair with adequate facilities of communication.

The layout of the town is in an isthmus surrounded on all sides by bays and the gently undulating character of the land with a mosaic of beautiful wooden houses, winding roads through ups and downs, and the wonderful interplay of land and sea and the cosmopolitan nature of the town with different types of people and their cultural activities grace this town with unique charms which resemble many of the hilly towns of India.

Formerly the Ross Island in the east of Port Blair was the administrative headquarter of the government and the seat of the Chief Commissioner. The location of the seat of the Chief Commissioner in such an island off the main body was obviously due to the security purpose. But since the re-occupation in 1945, the island has been abandoned completely because of the following factors.

- (1) Since the re-occupation, the Andamans changed into a free colony and as such the question of security was removed and the position of the Head Quarter in such an island off the mainbody created difficulties in communication and in consequence in administration.
- (2) Cracks developed over the island due to the earthquakes and a bodily sinking of it was also noticed. It was suggested by the geologists that no further development plan of the island should be made and the existing masonry houses in the island will also be destroyed in near future.

The island with the best buildings in the whole of Andamans had to be abandoned. But at present, the Chief Commissioner, is trying for the proper maintenance of the big buildings so that it can be used for some purposes.

The town of Port Blair has multitude of functions as the port, the administrative headquarter, the commercial, the industrial and the cultural centre of the whole of the Andamans. The town, as such, has its own compartments for all these separate activities in different places and a division of Port Blair into such functional zones is attempted.

1. Chatham Island — It is the port of the town and the main industry i.e. the saw mill has been set up in this small island. This saw mill

occupies more than half of the island, and the rest is occupied by Forest Office and newly built A. C. power house, run by saw-dust and timber, which supplies the whole of Port Blair with electricity. The Chatham island is an industrial area and is connected with the mainland by a beautiful wooden bridge.

II. Haddo area—It is a very thinly populated residential zone and almost all the houses are Government owned. The houses are located along both the sides of the roads in linear fashion and it seems that the development definitely followed a systematic plan. There are labour barracks for the labourers of the Forest Department and other Government staff quarters for the employees of the Forest Department and Power House.

III. Delaneypur—It lies in the south of the Haddo area. It is also a residential zones of class II government officers and the houses consist of 2 rooms.

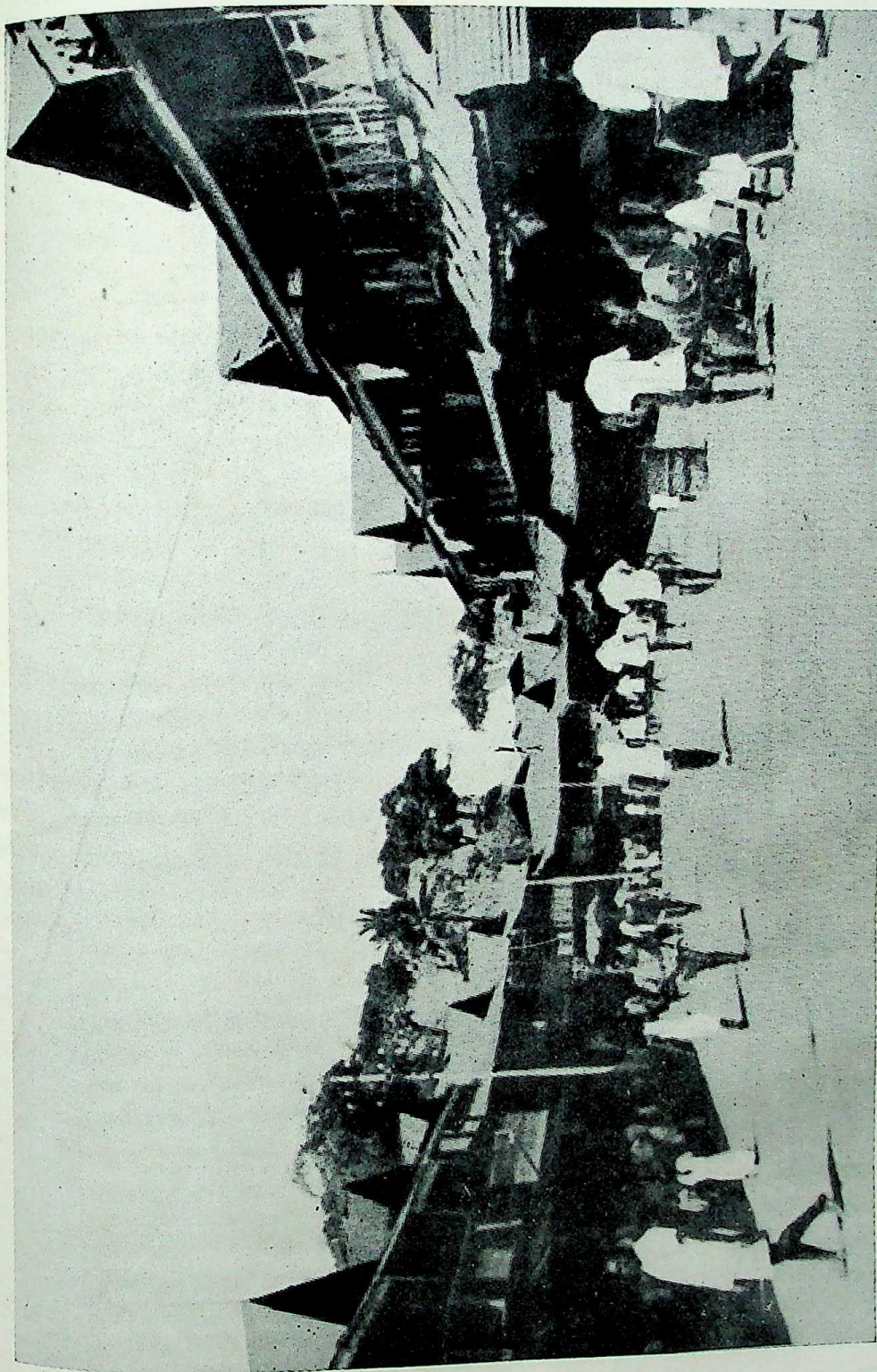
IV. Phoenix Bay—In the south of the Bay is a big residential zone of the local borns and the Burmans. All the houses are owned by the residents themselves. Many of them are engaged in Government services, business and the rest in agriculture in the surrounding regions.

In the north west of this zone, along the coast is the Marine dock-yard and workshop. At present a dock is being constructed.

V. Aderdeen area—This essentially forms the economic hub of the town lying at the central position of the town. The arrays of big shops, hotels and restaurants, cinema hall, clubs, school, office of the Chief Commissioner, Press, other government offices etc. radiate from the clock-tower at the junction of the 3 roads. What is seen in this area is clean pucca maccadamised roads with adequate electrification and on its both sides are quite big departmental shops, picturesque double-storeyed wooden houses and a very good market. The cosmopolitan character is evidenced in such a small town in her innumerable types of people and their characteristic manifestation—the local-borns having big business shops, the Burmans small shops of local sea-shells and other things, the Madrassis with big hotels and the Bengalees with a very few small shops.

In the fringe of this business centre has developed a residential zone with the thickest density of population. They are almost all double-storeyed wooden houses owned by the local-borns and Mapillas and generally the smaller ones by the Burmans.

VI. Atlantic Point—In the north east corner of the town is situated the world famous Cellular jail—the abode of thousands of political prisoners who fought for the freedom of India and many of them were



A view of the shopping area of Aberdeen, the heart of Port Blair.

hanged and many thousands were criminals. It is the biggest double-storeyed masonry building of the Andamans having 7 wings radiating out from a central pivot. Till 1942, 113,000 prisoners were admitted to this jail. The history of the past days of the prisoners still lingers in the minds of the people and augments the horror regarding the islands. Whatever be the past history, we must look forward for its betterment and with this view the entrance of this jail has been transformed into the biggest hospital of the Andamans, a really alluring spot of beauty and one wing is now the Bachelor's Mess, a residing place of the young government employees from the mainland which to-day is really one of the finest of the types found in our country. Another wing still continues to be the local jail and two wings are destroyed by the Japanese by bombing and the rest are deserted. The Government proposes to transform the jail completely into a full-fledged hospital in near future.

Very few residential quarters are present in this zone and at present some houses are being built up for the hospital employees.

VII. South Point—In the southeast side of Port Blair is the coconut cultivation area mainly developed by the convicts during their days of imprisonment. The wireless and telegraph office, the quarters of these employees are all situated in this area.

Although the town is peopled by different types of people, there is an uniformity in the types of houses. The houses are all built up of local wood with G. C. I. sheets on the roof. The walls are either weather-boarded or vertical beads. The kitchens are always separate from the main body of the house and are generally built behind the house. The detached kitchens are made because of the safety from the dangers of fire in the wooden houses. The people build generally one-storeyed house with 2 rooms and a varandah in front and those who are well-off build two-storied houses. All these wooden houses are well-ventilated, comfortable and beautiful to look at.

In general, the average standard of the houses in Port Blair are far better than that of the Indian towns and this is partly due to the better economic conditions of the average people. The cheap availability of wooden planks for house construction has evidently led to the construction of wooden houses.

VILLAGE TYPES IN THE ANDAMANS

"The aspect of village varies not only with the general regional setting, with building materials and house types, but also with social factors."¹

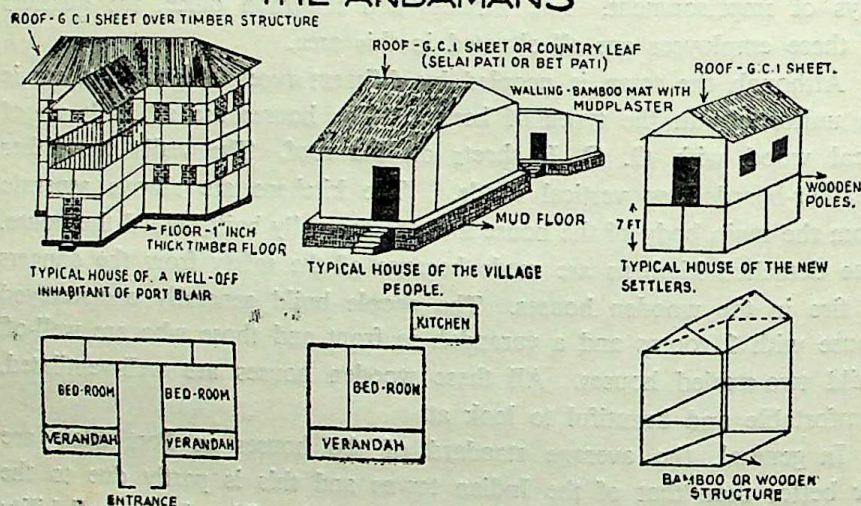
1. Spate, O.H.K. — India and Pakistan.

The aspect of the villages in the Andamans presents a very striking uniformity in character as the regional setting and the building materials are almost the same everywhere and the social factors have been almost negligent under the subordination of the common environmental complex.

The situation of the villages is generally in the centre of the cultivated areas with adequate facilities of water supply. The settlements are generally linear in type being situated on both the sides of a road or roads. Just behind the houses rectangular plots of land are devoted to vegetable growing and the surrounding areas to rice cultivation. The houses are all wooden or bamboo ones. The floor is raised a little from the ground to avoid the dampness and the floor and walls are made of bamboos or wooden planks and the roof of G.C.I. sheets (in the house of the well-off people) and *selai pati* or *bet pati* (in the houses of the poor people).

For the understanding of the village type a sample survey of a typical village in the south of Port Blair was done by the author.

HOUSE-TYPES OF THE ANDAMANS



Protheropur

It is a typical village of the Andamans lying 2 miles south of Port Blair. It is in between two trunk roads—one running from Port Blair to Beadonabad in the southeast coast and the other from the town to Garacherama and to further southwest, the main trunk road of the Andamans. A short local stream locally known as 'nala' flows through

the region and provides with the necessary water for cultivation when there is no rain.

It was estimated that the population of the village is near about 250. Of the total population 25-30 people are government servants in different government offices in Port Blair, 2-4 people engaged in animal husbandry and the rest in agriculture. The people are mostly local-borns with a few from Malabar. Those from Malabar are generally labourers of the Forest Department.

The settlement of the village is linear. All the houses are situated on both sides of the road. The houses are built up of wooden planks or bamboos for the walls and floor, and G.C.I. sheet on the roof. Just behind the houses lie the rectangular plots of vegetable gardens. The surrounding areas are all given over to paddy cultivation. As characteristic of all villages in the Andamans, the hilly lands surround the village and are covered by forests.

The economy of the village life is one of subsistence but the necessities other than foodstuffs are to be brought from Port Blair which come from the mainland. The little marketing facilities of the peasants narrowed down their purchasing power and in consequence there is a growing tendency of a few male members to seek employment in government offices or business to make stable their agricultural economy.

All the villages, because of their dependence on Port Blair for different types of necessities, are connected by good roads and people from distant villages come to Port Blair daily for carrying on their business, government jobs etc.

The depopulation of the villages are marked and the degree of depopulation of Protheropur is not so much as in many others. One such case is offered by the village Pahargoan. Situated near Port Blair, this village has experienced a great decline in her population. The village was inhabited by about 200 people in 1941 but the present day figure is only 25, members of 4 families only cultivating only 30 bighas of land. Such an appreciable decline in the population of the village is attributed to (1) bombing by the Japanese during the war and (2) since reoccupation most of the people returned back to India.

The factors for the depopulation in the villages of the Andamans may be summed up as follows :

1. Change of occupation from agriculture to industry, business, government services etc. in Port Blair.
2. Return journey of many people to their native places in India and Burma.

SAMPLE SURVEY OF OCCUPATIONAL DISTRIBUTION OF A FEW VILLAGES*

(1) <i>Stewartgunj</i>		A Mapilla village.	
Total number of families	...	57	
Mapilla	...	53	
Others	...	4	
Total population	...	243	
<i>Occupational distribution</i>		<i>Families</i>	
Only agriculture	...	6	
Mainly agriculture & Sub-sidiary labour	...	21	
Only labour	...	25	
Miscellaneous (including fishing)	...	5	
		<hr/>	
		57	
(2) <i>Maimyo</i>		A Burman village	
Total number of families	...	36	
Total population	...	146	
<i>Occupational distribution</i>		<i>Families</i>	
Only agriculture	...	15	
Mainly agriculture & Sub-sidiary labour	...	6	
Mainly labour & Sub-sidiary agriculture	...	3	
Main fishing	...	1	
Only labour	...	6	
Mainly agriculture & Sub-sidiary fishing	...	2	
Miscellaneous	...	6	
(3) <i>Webi</i>		A Karen Village.	
Total number of families	...	31	
Total population	...	217	
<i>Occupational Distribution</i>		<i>Families</i>	
Main agriculture	...	10	
Mainly agriculture & Sub-sidiary labour	...	4	
Only labour	...	5	
Only fishing	...	2	
Miscellaneous	...	2	

* A local-born village (Protheropur) has already been discussed and, therefore no other local-born village has been given in the list.

CHAPTER XVI

COMMUNICATION AND TRADE

Communication system within the country is developed only in the South Andaman and in the rest of the country road systems are almost absent besides the tramlines in the spots of forest exploitation. The Andamans having a large number of islands should obviously possess facilities for inter-island communication by boats and ships but it is really very much unsatisfactory. The communication systems are developed in accordance with the development of the different parts of the country and the need for trade and business, as a result. The Andamans, as such, have really very limited mileage of roads concentrated in the southern part only and irregular boat services are maintained for the inter-island communication.

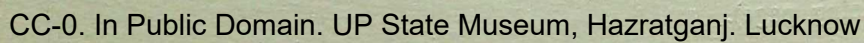
ROADS

Roads are developed only in the South Andaman which with an area of 359.51 sq. miles has a road mileage of 138. It has been said in the 1908 Gazetteer that the South Andaman possessed the best as well as the greatest mileage of roads in proportion to its area in India. Of these total mileage, the Japanese constructed 22 miles of strategic roads mainly along the coasts. The town of Port Blair has a very good pucca maccadam road system and two roads from the town run southwards, one towards Beadonabad and Calicut *via* Protheropur and the other towards the southwest along the coast of the Flat Bay towards the west and again turns towards the north following the western one of the same Bay and runs along the coast upto the North Corbyn's Cove. Other feeder roads from different villages connect this trunk road for their easy communication with Port Blair. Three such important roads are worth mentioning.

- (1) From the southern Flat Bay coast to Mongluton in the south.
- (2) From the western Flat Bay coast to Herbertabad, situated on the west coast of the South Andaman.

- (3) Bamboo Flat to Wrightmayo in the north.

Besides these metalled roads there are a number of unmetalled ones and foot paths all over the South Andaman. (See the map in the adjoining page).



The alignment of the roads is dictated by the physiographic controls. They never cross the hills which are not of course effective barriers. The development and the pattern of the road systems in the Andamans have been influenced by two reasons.

- (1) As all the villages depend for most of their necessities on the imports of the mainland which come to Port Blair, connection of the villages with the town was extremely necessary.
- (2) Most of the Japanese roads and other roads specially along the coastline have been constructed for strategic reasons.

The roads are not at all busy and in general the lorries and trucks, few pedestrians and occasionally motor cars are found. The carts are also seen but not in such great numbers as in the villages of the mainland.

Two bus-services run from Port Blair to Tusinabad in the north of South Andaman and the other to Maimyo via Mongluton. These bus services run once in a day.

Taxis are available in the town of Port Blair and the hiring charge is Rs. 1-2-0 for the first mile and 14 As. for the subsequent miles.

Development of the Road Systems

With the colonisation of the settlers in the islands, the overimportance of the South Andaman and specially the town of Port Blair will be eclipsed partially by the development in other parts of the islands, which are being colonised. There is also the possibility of a shift of the centre of gravity of the economic, trade and business activities from the south to the north and predominantly in the Middle Andaman. This type of an all-round regional development envisages the development of communication and an idea of the roads to be constructed in the Second Five Year Plan is given below.

Trunk Road

A trunk road is to be constructed for a thoroughfare through the great Andamans from the south to the north. At present, the road will be constructed from Mathura in the South Andaman to Port Bonington in the Middle Andaman, a distance of 120 miles. The road will not be extended further north in the North Andaman because at present this part will not be colonised and in future when specially the Kalara Valley would be colonised, the urgency for extending the road further north would be felt.

The difficulties in the construction of the roads arise because of the break of the roads due to the presence of the straits which are (i) Middle Strait (ii) Homphrey Strait and (iii) Austin Strait. It is still under consideration as to whether bridges, either wooden or concrete, are to be constructed over them, or some ferry services are to be maintained which is capable of transporting motor trucks.

The actual route is planned on the 1" inch to 4 miles map of the survey of India which hardly serves the purpose for planning the roads. The estimated cost of construction of this trunk road is Rs. 141,76,400/-.

Feeder Roads

As the trunk will run through the heart of the Great Andamans, feeder roads from different parts should connect it so that complete co-ordination is maintained in all parts of the islands.

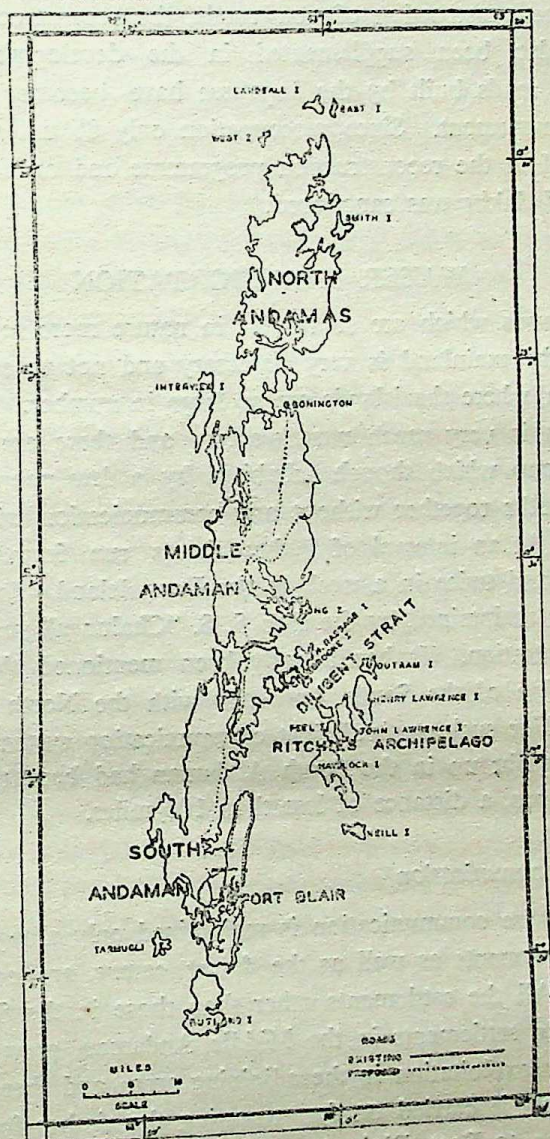
The following feeder roads are to be constructed in the South Andaman.

- (a) From Rangachang to Chiria Tapu to serve the Burma Nala and the Sukha Nala area. The estimated length is 7 miles and the cost is Rs. 6.75 lakhs.
- (b) A circular road connecting Mongluton with Newasahar via Manjeri to serve the Dhani Khari area, which would be 5 miles long and the estimated cost is Rs. 4.82 lakhs.
- (c) A road along the sea coast of the Shoal Bay running towards the north from Wrightmayo to Kalatong and along the east coast of the creek to the Shoal Bay which will turn south along the east coast of the Andamans where it will connect the existing metalled road terminating at the North Corbyn's Cove. The length of the road is estimated to be 37 miles and the estimated cost of its construction is Rs. 36.07 lakhs.

The Middle Andaman offers the greatest potentialities for colonisation and therefore, the road systems should also be developed to a great extent. Three feeder roads will be constructed in this part of the Andamans and they are as follows.

- (a) Sinkin to the junction point of the trunk road, 11 miles long and estimated cost is Rs. 10.60 lakhs.
- (b) A feeder road from Betapur via Rangat Bay along the coast to Bamlungta which will be 28 miles long and the cost estimated for its construction comes to Rs. 27.03 lakhs.
- (c) Another feeder road from the trunk road to Lukriwath Bolyo

EXISTING AND PROPOSED ROAD SYSTEM OF THE ANDAMANS



on the west coast (6 miles) and the estimated cost for the construction is Rs. 5.79 lakhs.

Immediate programme for the construction of roads in the North Andamans has not been launched upon.

Besides the construction of new roads, the reconstruction of the old ones have also been supplemented in the development programme. Many of the roads built by the Japanese have become completely unsuitable for movement. Since reoccupation only 87 miles of old roads were included in the reconstruction programme and an estimate amounting to Rs. 25 lakhs was sanctioned.

WATER TRANSPORTATION

In the islands which are so insular in nature more regular communication with the mainland is very necessary and not to speak of the inter-island one, where the islands are so large in number. But the present day condition is very much unsatisfactory and there are islands in the Andaman group which though inhabited by a few people, remain isolated for months together without any communication with any part of the islands. At an interval of 7 days, boats run from Port Blair to Mayabunder and twice in a week to the Long Island. Inter island communication is maintained by the ship S. S. "Chalunga" run by the Andaman Administration. It has already been mentioned that there is no road connection of the South Andaman with the North or the Middle Andamans. For such an inefficient communication system, a few people born and brought up in the South Andaman had been to the North or the Middle ones, a distance of less than 100 miles.

Coastwise Communication

The coastwise communication is maintained only along the east coast as all the settlements as well as the forest camps are confined in this coast only. All the settlements other than those in the South Andaman and the Karen settlements in the Middle Andaman, grew up due to the need of forest exploitation in the adjoining areas and therefore, the trade along the coast is carried on for exporting the timber from the regions of exploitation to Port Blair to make it ready for overseas export. Therefore, the timber exportation forms the basis of the coastal communication and it is obvious that the necessary food-stuffs and goods are taken over to all these places from the town of Port Blair. The coastal communication is maintained by the boats of both the Forest and the Marine Departments. As the forests of the North Andaman are

not in possession of the Forest Department, the communication with the North Andaman i.e. Mayabunder is maintained by the bi-monthly service from Port Blair by the Marine Department.

With the growth of the settlement the nature of the trade would be considerably changed. Besides timber the amount of the import as well as the export will necessarily increase.

It may be questioned as to whether the water communication or the road communication should be given priority in the communication of the Great Andamans. It is true that water transportation is cheaper than any other form and in such cases the timber should continue to be transported by water, but for the swift movement of the people and other necessary goods, road communication should supplement the other.

Communication with the Mainland and the Nicobars

In spite of the dependence of the Andamans on the mainland, the communication facilities with the mainland is very deplorable. The S. S. Maharaja was the only ship by which the communication with the mainland used to be maintained. The cargo had a carrying capacity of about 1000 tons and almost the whole space used to be occupied by the Forest Department for the export of the timber to the mainland. All the necessary food-stuffs and other things are brought by the ship to Port Blair. The Maharaja sailed between Port Blair and Calcutta and at a longer interval between Port Blair and Madras. On its way to the Madras the ship touched Car Nicobar. It takes 3 days both from Calcutta and Madras to reach Port Blair under normal weather conditions. In such circumstances, the interval of communication of the Andamans with the mainland can never be less than 10 days.

At present, the communication is maintained by two cargo-cum-passenger motor vessels M.V. "Andamans" and M.V. "Nicobar" by the Andaman Administration.

Car Nicobar has the facilities of communication with Port Blair because a few boats owned by Akooji, the biggest merchant of the Nicobars, run between the Nicobars and the Andamans.

AIR LINES

The Japanese constructed an aerodrome in Port Blair for the landing of light air crafts. Since reoccupation, it has been abandoned and surveys have been made for the reconstruction of the landing ground. There are great dangers in landing of the air crafts because of the variable wind directions and dearth of very wide open space of the landing ground.

Only very recently, the Indian Airlines Corporation are operating a weekly service from Calcutta to Port Blair via. Rangoon. The period for this flight is approximately seven and half hours.

TRADE

The trade with the mainland is carried on through the export of timber, coconut, sea-shells etc. and imports of all the necessary food-stuffs, cloths and luxury goods. On an average, 30,000 tons of timber and 600 tons of coconuts are exported to the mainland and to London and on the other hand 2000 tons of food grains are imported from the mainland. The timber is the basis of the trade and is valued at about Rs. 60 lakhs annually. In recent years, with the working of the colonisation scheme there is a rise in the bulk of the export trade and at the end of the present plan period, valuable timber estimated at approximately Rs. 2,50,000 would be available for export.

The trade with the mainland is carried on by the two ships, as already mentioned and also ships directly come from London to Port Blair to carry the timbers, especially the padauk and the garjan.

A great change is taking place in the bulk as well as the nature of the trade with the progress of colonisation in the islands. The timber will no doubt remain the main exporting material but its relative importance will decline with gradual rise in the export bulk of the sea-products, the coconut and the associated by-products, fruits etc.

Such an increase in the bulk of the export necessarily depends upon the addition of more ships for carrying on the increased trade and the introduction of the refrigerating system in the ships for the export of the perishable goods like fruits and fishes.

The nature of import will also change to a considerable extent as the present day dependence on food-stuffs will be minimised. The imported goods, in future, are expected to be finished products and luxury goods in place of the total dependence of all sorts in the present days.

PART III
OVERALL ASSESSMENT

CHAPTER XVII

AN OVERALL ASSESSMENT

Andaman Islands, much like many other small islands in the tropics, have grown up through solitude and have remained under the deep mantle of forests. The aboriginal population spreading over the different parts of the islands is on the verge of virtual decay and much of these awful consequences have been possibly due to the imbalance in their social set-up brought about by the impact with the foreigners. The Andamanese group has died out and the aborigines of the Little Andaman Group, the Onges, the Sentinelese and the Jarawas, have experienced a great decline. So the only island which still now commands for its being essentially aboriginal in nature is the Little Andaman—the abode of the Onges. The means that are taken for the improvement of the lot of the aborigines have been already discussed in the chapter on the aboriginal population. They will, however, continue to be of wide academic interest for their being one of the purest groups of the negritoes and some of these subgroups still now have not been studied.

The real need for developing these desolate islands was necessitated because of the development of the penal colony for giving terms of conviction to the mutineers of the Sepoy Mutiny and also to the other civil criminals. Port Blair, the headquarter of the administration of the Andaman and Nicobar Islands and the site of the cellular jail grew up to prominence as the only area of the settlement and the released convicts were given land in or around Port Blair for practising agriculture. Under such circumstances, the whole of Andamans, though of an extremely small area, never had the settlement of the people all over the islands and simultaneously with it, the welfare of the aborigines was not at all genuinely attempted. There has been, on the contrary, a constant impoverishment and decay of their pristine culture and number. The economic activities have been limited to the exploitation of timber and some of the species grown in the islands command a wide market at home and abroad. But the depletion of the forest was not associated with a systematic regeneration of forests and the other economic activities were mainly little agriculture confined to the South Andaman and also a very negligible amount of marine fisheries. The overall picture before the independence of India has been the emergence of an economy

essentially based on the timber exploitation and growth of little agriculture, both of foodstuff and plantation crops like rubber, tea etc and the production of the foodstuffs was much less than the local demand and that of the plantation crops not at all of the amount to command a market. An almost total dependency on the mainland has been a marked feature of the economy of the islands and the bad consequences of such an economy have been realised during the last war when the supply of foodstuffs and other goods from the mainland became extremely erratic and hazardous. Not only to speak of these small islands, some of the bigger countries like England, Ceylon etc have experienced such consequences.

A marked stagnation and decay in the economy and the population of the islands were quite distinct upto the end of the fourth decade of the 20th century. Such conditions are being substantially improved upon since the independence. An all-round regional development has been envisaged by way of tapping the resources, colonising the islands in the different parts, etc.

An appraisal of the post-independence conditions would reveal that the few Andaman Indians who had settled in the South Andaman only, though given land for agriculture, were moving constantly for jobs in the Forest Department and other departments of the Andaman & Nicobar Administration. The settlement never extended beyond the limits of the South Andaman and for the predominant urge for working in non-agricultural occupations, the agriculture of the islands experienced little growth in course of time. Lack of free movement and the abnormally great government control have been possibly the main factors for the lack of genuine urge among these people for developing these islands. The islands with such a stagnating population of the Andaman Indians and a declining aboriginal population are being colonised by the East Bengal refugees and also by some people from South India. From the previous assessment of the resources, it is found that the potentialities of the islands are extremely limited. The soil being virgin is fertile at present but is fraught with serious problems of soil-erosion and also depletion of the mineral nutrients in course of time as is very common to the tropical countries. The mineral resources as well as power resources are conspicuously lacking and therefore, the chances of developing big processing industries are quite meagre. Again, the communication problem is considerable and some of the islands are extremely small in area for the development of settlement. Under such circumstances, the growth of settlements, as has been pointed out earlier, can

only be possible by way of developing the agriculture in the areas which so long remained untouched by the human hands.

INFLUENCE OF GEOGRAPHY IN THE COLONISATION OF DIFFERENT COUNTRIES

A close survey of the colonisation in different countries will reveal that their success or failures are influenced to a large extent by the geographical background of the respective regions. One cannot be fully deterministic regarding the role of geography as the decisive one in the possibilities of colonisation but it could be said with fair certainty that the geography is the primary consideration in the possibilities of colonisation.

A detailed account of the actual potentialities and the progress and the functioning of the colonisation scheme has been made in a previous chapter. The geographical background undoubtedly plays the most important role in the colonisation of the people from one geographical region to the other. A few such case studies on the colonisation schemes of the different countries are being given below for illustrating the effects of the geographical environment in the implementation of colonisation.

It may be remembered that the colonisation may be either industrial colonisation or agricultural colonisation and we are concerned in our present study with the agricultural colonisation in the Andamans. Here we will try to estimate the influence of geography in the colonisations that have already taken place in different places of the world and assess the factors underlying their success. It is not within the scope of this study to estimate all the colonisations that have taken place all over the world but only a few with brief notes are given.

Colonisation in Hokkaido¹

The wild island in the north of Houshu in Japan known as Yodo (i.e. wild) and afterwards renamed as Hokkaido, was as much unknown to the Japanese as the Andamans are to the Indians. It is of a mountainous nature and plain lands do not exceed 15-20% of the land and these plains are confined largely to the coastal regions and the Ishikari-Yufutsu lowland, is one of the largest of its kind in Japan. The climate of the island, because of its situation north of 43° lat, and its position off the continental Asia, is of the insular type.

Like Andamans, Hokkaido is under deep forest cover which occupies 72% of the total area of the island and large areas in the lowlands are

1. Trewartha, G. T.—Japan, A physical, cultural and regional geography.

water-logged creating swamps, marshes etc. which inhibits agriculture before they are reclaimed.

It was a country of the Ainus, the aboriginal inhabitants of the island who used to live in the interior of the country. The Japanese fisherfolks used to do fishing in the surrounding seas of the islands and the richness in its surrounding seas made many people settle along the coast of the islands since the 12th century. Upto the 18th century, the increase in the new settlement was very limited and confined to the coastal lands. The factors behind this little growth in the population of the Japanese was partly because of the hostility of the aborigines, the severe climate and little colonisation spirit of the Japanese. (1800-30,000 Japanese).

Fresh impetus for colonising the island by the Japanese was revived by the then Japanese Government, the Tokugawa, in the early decades of the 19th century. The Tokugawa government, being afraid of the Russian expansionist policy in the Far East, immediately tried to colonise the island thoroughly by Japanese. Hence for the political considerations, the island was attempted to be converted into an agricultural colony. The Japanese were urged to colonise in the island and there was an addition of 30,000 people, through colonisation, within the period of 70 years, ending in 1870. But this rate of colonisation of the Japanese people was highly unsatisfactory and the agriculture was little cared for by the new settlers who used to take up fishing as their occupation. This tendency in poor population growth is evidently due to the geographical factors eloquent in the climate, the deep forest cover, the fear of the aborigines, large coastal lowlands and the richness of the surrounding seas.

The colonisation started progressing very fast with the Meiji Restoration in 1868 when Hokkaido was declared as a part of Japan proper. Population increased from 60,000 in 1870 to 244,000 in 1882, that means within a time of 12 years the increase in population was 184,000. The adaptation of the new settlers in the island is evident from the fact that the settlements grew up only along the coast and attempts for rice culture in the land were made but failed and ultimately led the people to grow new crops adapted to the climate and soil of the island with a good deal of reluctance. Considerable development of the islands with the construction of roads, railways, etc. did not change the essential character of the economy of the people which was fishing, an universally adapted occupation of the Japanese. Another attempt of agricultural colonisation was made in the year 1875 when a military settlement was created in the Ishikari-Yufutsu lowland through a good deal of encouragement by the

government by helping them with money as well as devices. Even to-day fishing predominates the economy of the country.

The general characteristic of the colonisation of Hokkaido may be concluded as a not very successful form of colonisation. This relative unsuccess lies in the reluctance of the people in settling in the island which is influenced primarily due to the geography of the island and also due to the social psychology of the Japanese and the defects in government planning. The general points regarding the colonisation are summed up in the following lines.

1. The physiography of the islands, as already said, is of the mountainous nature and the only lowlands are along the coasts and along a few river valleys. Hence the locations of the settlements have been largely dictated by the physiographic background of the island. It may be mentioned that the coastal regions were first settled and afterwards with the clearance of the forests in the river valleys, settlements grew up in those regions.

2. The climate of Hokkaido is of the severe type which hardly allows the growth of rice, the basis of the Japanese agriculture. The adoption of a new form of agriculture having basis on wheat, oats etc. have not been taken up by the Japanese and if at all, they had to do it under forced compulsion. Hence the great variation in the climates of Old Japan and Hokkaido led to a great cause of unsuccessful adaptation of the people.

3. The fishing forms the predominant economy of the Japanese who were accustomed to this form of occupation in their native land.

4. The hostility of the Ainus, the aborigines of the Hokkaido stood in the way of unhampered penetration into the interior of the islands but this hostility has given way to peaceful compromise with the new people in course of time.

5. Hokkaido, being an integral part of Japan does not suffer from any antagonistic views of the other people and the attempt for the colonisation in the island was made not to exploit the island but to provide a safety valve for the immigration of the people from the overcongested Japan for setting up their hearth and home in the island. Besides this, the situation of the island being strategic evidently demanded more men and material for the political stability of the island and this was a possible reason of the Japanese government for colonising the islands with Japanese people.

Colonisation In South America.

The basic nature of colonisation in South America is different from that of the Andamans or the island of Hokkaido. Intrusion and assessment of rights and occupancy of land in a foreign country by the Spanish and the Portuguese have been attempted in the South America since the sixteenth century. The legal right of any country in intruding into a foreign one either for settlement or exploitation, is not the object of this study but the adaptation of man with the change of his environment is what is aimed at, leaving aside the political issues in colonising the country. We will only consider the influence of geography in the colonisation of the country.

At the time of settlement the whole of South America was under the tropical as well as deep equatorial forests inhabited by the Indians. The present day population of these people is very limited in comparison to the vastness of such a continent and the white settlement is also confined to the coastal tracts and the high plateaus and a few river valleys. "With the exception of small scattered centres along a few well-marked routes penetrating by river valleys or across the continent in the narrower southern section, almost the whole of the effective population lived till recently within about 300 miles of the coast." Such a case of population concentration of the new settlers arise partly because of (a) the fact that these people came by sea and as such the coastal region was first settled; (b) the hostility of the aboriginal inhabitants; (c) the presence of deep forests and (d) unsuitability of climate.

The general economic pattern is also not very satisfactory as little attempt has been done for the all-round development of the country by the Spanish or the Portuguese and the only progress that has been achieved is in agriculture which has also been oriented in relation to the demand of Europe. In consequence, the importance of plantation crops, sugar, etc. have increased far beyond the local needs for the facilities of marketing in foreign countries and mining also expanded for export in the above countries.

With the expansion of the territories of the Spanish and the Portuguese, the two of the republics of South America, Bolivia and Paraguay—the population consists almost entirely of Indian and in Peru, Equator, Colombia, Venezuela and Guianas the Whites are very much in a minority.

It appears that the success of colonisation is not at all satisfactory and this lies partly in the misadaptation of the people from Europe in CC-0. In Public Domain. UP State Museum, Hazratganj. Lucknow

such a continent. The general influence of geography in the colonisation of the Whites in this continent may be analysed as follows.

1. The primary factor of the bad adaptation in the land is because of the great difference in the nature of the original land of these settlers in temperate latitudes with that of this continent in tropical as well as equatorial latitudes. This has been rightly pointed out by Shanahan that "only in very limited parts of South America did the Spaniards or the Portuguese find climatic and physical conditions resembling those with which they were familiar in their European homes. The economic conquest of South America would have been much easier for Europeans had they found on their arrival there, as they had done in Asia, native populations advanced to a sufficiently high stage of civilisation to have learned how to utilise the productive capacity of the soil in the tropical areas. But the New World was poorly provided with useful plants and animals compared with the Old, and throughout the valley tropical parts of it the natives had no fund of experience in turning natural resources to productive uses that could be appropriated by the Europeans".¹

2. The settlements of the Whites, therefore, are found to concentrate in the coastal areas (which was first colonised) and the high plateaus with lower temperature conditions are also congenial to their settlement.

3. These people, accustomed to sea life and little to agriculture, naturally could not give way to the successful agriculture which was again so much different from their native land.

4. Rational utilisation of land has not been attempted which is apparent from the nature of agriculture, mining, etc. and little has been done to develop the country as a whole for the sake of the people who live on it.

From the above studies it becomes clear that the study of colonisation in a country demands for a thorough knowledge of the geographical conditions of the region. It is the existing geography on which the colonisation is superimposed and that is why the author has tried to give a picture of the existing geography of the Andamans under the two heads i.e. (1) the physical background and (2) the cultural background in the previous parts. The successful form of agricultural colonisation as analysed in the above cases is achieved when

- (a) there is ample of uninhabited plain land suitable for agriculture with good facilities of water supply.

¹ Shanahan, E. W.—South America, An Economic and Regional Geography with an historical chapter.

- (b) there is little hostility of the indigenous people,
- (c) there is good adaptation of the new settlers to the new land. The success of the adaptation depends on the following conditions,
 - (i) if there is a little variation in the physical background of the new land from their original one. Of these the climate appears to be the most effective factor and little change in the occupation pattern of the people,
 - (ii) if the adaptive capacity of the new people, their own urge for taking initiative in creating their hearth and home in the land is high.

The new schemes for inter-regional movement of people from one part to another to form a balanced economy over the country must be prepared in the light of the above geographical considerations. We have already analysed the colonisations that occurred in the Andamans at different times by different types of people in the Chapters on the cultural Background (Part II) of the islands.

The local-borns are the largest community of the later settlers and it has already been shown that they have not become successful colonisers in the islands as regards the proper utilization of the land on which they live. The geography of the islands has a great say in this matter and let us discuss it in the following lines.

(1) The penal settlement of Andamans was a colony for exploitation. Any attempt for successful settlement of the convicts, after their release, was not made and partially for the advantage of the government administration, they had to settle in the South Andaman only and in a few scattered places for the exploitation of the forests. The attempt for agriculture, forestry, fishing etc. did not, as such, receive any great encouragement from the government who recruited these people in the offices and forest departments.

(2) The hostility of the aborigines has also played a great role in checking the expansion of the settlement area in the islands and specially the growth of the settlements in the west coast has not been possible because of these aborigines.

(3) The lack of knowledge regarding the availability of plain land and their water-supply conditions created troubles in the proper selection of the spots of settlement.

(4) The local-borns comprise of different people with different caste, occupation and culture. But under forced circumstances, all of them had to take up agriculture and many of them from Punjab and Western U.P. who were agriculturist by occupation, had to take up rice culture instead of wheat in their native land. This change in occupation pattern was evidently taken up by most of the people through reluctance and in

course of time many people gave it up for their opportunities of employment in offices etc.

(5) The adaptative capacity of the people have not been fully utilised in building a stable economy. This indifference towards the islands has grown probably due to the want of faithful leadership and unstable social structure. The family life of a man necessarily gives an impetus to a man for the building up of a stable economy at home but within the Andamans most of these people are unmarried who are found to take little care in the proper utilization of the resources they possess. A stable social structure can be built only when there is a balanced sex-ratio of the population and a healthy growth of it. (For the analysis in detail see the chapters on Cultural Background).

It appears that the failure in the successful colonisation in the islands has not been so much due to the physical conditions of the islands as due to the type of colonisation attempted by the British Government.

Under the light of these geographical conditions that the possibilities of colonisation and the progress of it in the islands are to be assessed and achieved. It may be remembered that the colonisation which is being attempted is of permanent settlement.

The share of the development of the Andaman Islands simultaneously with the mainland has been undoubtedly of considerable magnitude. The very geographic personality of the islands has been undergoing a rapid change with the opportunities of permanent settlement of the refugees that have been stabilising as well as accelerating the economy of the islands. Timber forms the chief source of revenue as some of the species have a good market in the mainland and abroad. What could be the optimum area of the islands under the mantle of vegetation has been discussed in the earlier chapters. Being the only resource of any importance, the timber resources of the islands should be fully utilised. It is undoubtedly a great necessity to maintain a sufficient percentage of the land under forest cover with the exploitation of timber which should be always adequately supplemented by systematic regeneration.

The marine fisheries, though rich in the Andaman Sea, remain untapped. The presence of big market in the mainland can obviously enthuse the development of the fisheries but the men and materials are awefully lacking. A training of the marine fisheries, purchase of sea trawlers, adequate facilities of refrigeration and quick transportation facilities are necessary for the development of the marine fisheries. The catch of fishes in the Andamans has been of subsistence level and such

programmes of intense deep-sea fishing should be implemented at an early date.

The virgin soil of the tropics is generally rich and in the undulating terrain of the Andamans, the chances of soil erosion, if subjected to unscientific methods of agriculture, are extremely great. Being hilly in terrain, the terraced cultivation should be practised to avert such dangers. Paddy is undoubtedly the most important crop both in yield and acreage. Under the physical conditions of the islands, paddy is the most important foodstuff and simultaneously with it other root crops like tapioca, growing in relatively poor soils should be encouraged. The plantation of crops like coconut, coffee, tea and rubber may be further developed in the islands. The coconut plantations were developed in the settlement areas of the South Andaman and have proved extremely economical. But the trees are sufficiently old and as such, the yield per tree has gone down sufficiently. New areas, as such, should be developed for the coconut plantation and a very due attention has been paid for the production of this plant in the colonisation scheme. The growth of the other plantation crops, in such small islands, though started in the early days of the settlement, not necessarily commands a high yield or command a wide market. The plantation crops which will not enjoy any supremacy in production, yield or market hardly have got any justification of being produced in commercial scale. But the growth of orchards, as is common to most of the tropical countries, should be further developed in the immediate neighbourhood of the homesteads. However, in agriculture, rice and other commodities will be grown for home consumption only and the only agricultural commodity which can very well exceed the local demand is coconuts, which besides the kernel provide raw materials for the making of ropes and coirs and also for a number of cottage industries.

The industrial growth of the islands, as has already been discussed, is limited by the paucity of resources. Raw materials and availability of power are the most important criterion in the location of any industry. The only raw material of some importance is timber which is, however, being processed in the Saw Mill at Chatham, though a considerable amount is sent to the market only after the preliminary processing. Besides sawing, the development of any industry on wood becomes highly prohibitive if the market is beyond that region. However with the growth of the market within the islands, the development of some small ubiquitous industries is very much likely. The only other industries are small scale industries of coir making etc. In the conspicuous dearth of minerals

and power resources, the scale of industrial development will remain in the small-scale level and that also for feeding the local market. The marine fisheries can be developed if the above-said requirements are adequately fulfilled.

The cultural background of the islands is a display of great heterogeneity. The aborigines as they are confined to particular areas, virtually exert no influence in the shaping of the country and it is through careful attempts that they can be further civilised. The later settlers, settling in and around Port Blair, though given sufficient land for practising agriculture have been drawn more to Govt. services in course of time. Though behaving themselves distinct from the other people in the Andamans, there are a number of cases of marriages between the refugees and the Andaman Indians. The new settlers are obviously throwing open the areas of the Middle and North Andamans. The land though stand out in deep contrast with the land of Bengal, the pace of development is quite praiseworthy. As a successful colonisation needs a rich cultural pabulum, a dearth of which is found among the new settlers, more of educational institutions and cultural set-ups are necessary for the healthy growth of the new-comers. Never the Government control and supervision can prove adequate for the improvement of these qualities.

For the islands, both the interisland and mainland communication need further development. The service with the mainland, as has been pointed out, is at an interval of a fortnight and the service for the interisland communication is far more unsatisfactory conducting a round trip at an interval of sufficient number of days. With the growth of settlements and the stepping up of the exploitation of the forest resources, the communication should be undoubtedly much more improved upon. The trunk road joining all parts of the islands should be constructed just to make a quicker service for the movement of the passengers and commodities, which was so long not a necessity. The movement of timber can never be expected to be by roads because of the prohibitive cost of transportation compared to the sea transport. The insularity of the islands and their innumerable number will always maintain the supremacy of the sea communication.

The islands, in spite of the smallness in area, are undoubtedly very much interesting for academic studies. The history of the islands shows how a gradual change has been brought about by a sequence of colonisation in the Andamans. Such phases of evolution are quite characteristic of the other tropical islands. Tourism of commercial scale has never been attempted in the Andamans having an equable

temperature throughout the whole year, wonderful scenic beauties which are manifested in the undulating terrain, interplay of land and sea and also in the calmness of the tropical forests and sea beaches. The pleasure of hunting and trip for the interisland communication are some of the rare pleasures to be derived in any other part of India. The town of Port Blair is itself graced by some charm. The wooden houses, the pitched roads and a variety of people and their own attributes and the places of the historic interests such as the Cellular jail, the water tank with a gate of the Japanese style, the big buildings of the Ross island which were previously used as the seat of the Andaman and Nicobar Administration, the Marine Drive, Marina Park, Clock Tower, Horticultural gardens, Mount Harriet Range and Madhuban have made Port Blair quite a worthy place for tourism. A journey extending over 3 to 4 days by ship, either from Calcutta or Madras, is immensely enjoyable to those who have not experienced sea voyage and the calmness of the town of Port Blair makes it a worthy place for a few restful days with all the amenities of modern life. The fares are not prohibitive and depending upon the nature of accommodation the fare varies from Rs. 205/- to Rs. 23/- for one way movement and a flight by the airways is Rs. 300/- (Single) and Rs. 570/- (Return). No genuine efforts have so far been made to develop tourism in the islands. At present, for a visitor to the islands there are a number of difficulties. There is the problem of accommodation in the town of Port Blair. There is neither any good hotel nor any tourist guidance to give necessary informations and make arrangements for conducting a trip to the different parts of the islands. A few regional centres in the different parts of the islands may be set up in places like Port Blair, Long Island and Mayabunder and if a co-ordination could be maintained between these three centres for conducting a round-the-island trip, the Andamans with such attractive features will undoubtedly become an important tourist centre in the future.

Days before the independence were not at all conducive to the growth of cultural activities. However two clubs were established—Atul Smrity Samiti, a club having a library and fostering some cultural activities and the other one is the Andaman Club which is predominantly of the Andaman Indians. The educational facilities are also being extended. At present there are in all 80 schools in the whole of the Andaman & Nicobar Island. There are two high schools at Port Blair, one for the boys and the other one for the girls. With the growth of the new settlements in the different parts of the islands, the need for improving

and establishing educational centres is a necessity and in most cases in the settlement areas, schools are being set up. There is hardly any denying the fact that the rehabilitation programme must be associated with adequate facilities for cultural activities. Never the healthy growth of a people can be foreseen without adequate cultural pabulum. In such desolate islands, such efforts were not at all genuinely attempted and such efforts are undoubtedly necessary for these new isolated settlers.

On an overall assessment of the islands, the need for developing agriculture and the communication facilities occupy the top priorities. The total revised outlay during the Second Five Year Plan is 603.135 lakhs of rupees., under the following heads.

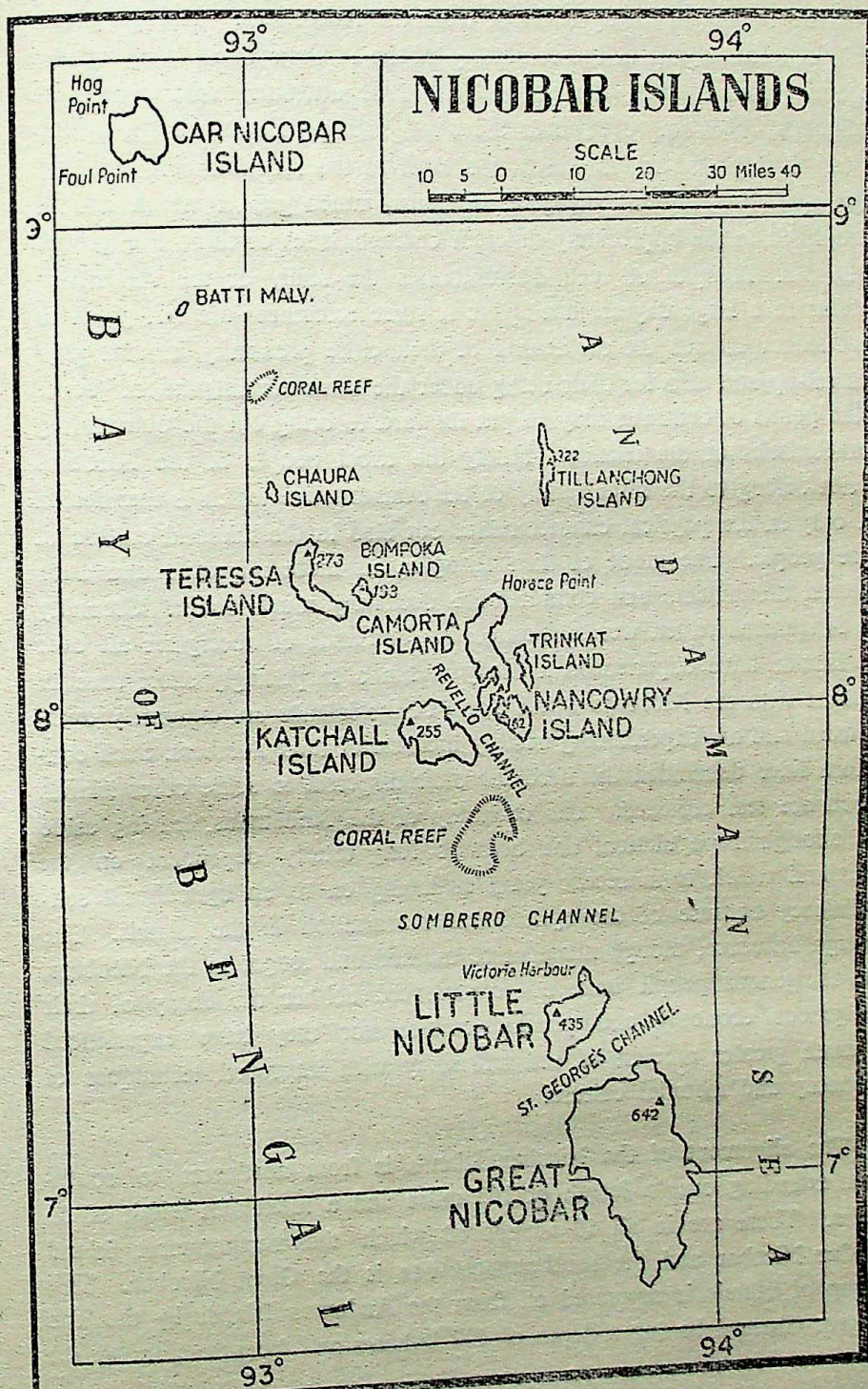
Agriculture & Community

Development	...	...	Rs. 263.610	lakhs
Transport & Communication	...	...	Rs. 240.000	"
Social Services	...	...	Rs. 86.620	"
Industry	...	...	Rs. 7.000	"
Power	...	...	Rs. 2.500	"
Miscellaneous	...	...	Rs. 3.405	"

PART IV
THE NICOBAR ISLANDS

CHAPTER XVIII

THE NICOBAR ISLANDS



The second group of islands lying south of the Andaman Islands known as the Nicobar Islands present a distinct geographical personality of her own being distinctly different from the Andamans. Though geologically it forms a part of the continuity of the Arakan Yoma merging into the Indonesian Islands, the people and their attributes are, unlike the Andamans, more improved than the aboriginal population of the Andamans. Though the island which is nearest to the Andamans is only 120 miles apart, the cultural voyage is obviously much greater which will be exemplified in the appreciably different characteristics of these two groups of islands. In spite of such dissimilarities the study of the Andamans remains to a large degree incomplete if some references are not given to the Nicobar Islands for the reason of their close proximity, similar physical set-up and also for their being under the same administration. Some of the points of contrasts may be put forward to bring out the outstanding characteristics of the islands. Firstly the tribal people of the Nicobars do not belong to the same family of the Andamanese which is manifested not only in the physical characteristics but also in the material culture of these people. The mode of their living is far more improved and their material attainments and comforts are decisively much better. Secondly the Andamans which were inhabited by thousands of aborigines all over the islands have experienced a decay within a surprisingly short time in contrast with the Nicobars where some of the islands are extremely overcrowded and are experiencing healthy increase of their numbers. Such conditions have demanded the need for their dispersal to some other islands which are less crowded. The economy of the Andamans, leaving aside the aboriginal population, has been so long totally dependent on the mainland which is in recent years switching on to an agricultural self-sufficiency because of the agricultural colonisation in the islands. The foreign influence, though much more marked and longer in the Nicobars, the indigenous people have not experienced neither the decay of their indigenous economy and pristine culture nor they have experienced a much greater amount of self-sufficiency with improved techniques of economy and material culture.

The alignment of the Nicobar Islands is from northwest to southeast extending over a length of 163 miles and a maximum width of 36 miles. There are in all 19 islands of which the northernmost island is Car Nicobar and the southernmost one is the Great Nicobar. This group of islands is separated off from the Andaman Islands by the Ten Degree Channel having a depth of 400 fathoms and from Sumatra by the

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Great Channel (750 fathoms). The biggest island is the Great Nicobar (333.20 sq. miles) in the extreme south of the group of islands having a low density of 0.48 only, followed by the Little Nicobar in the immediate north of it having a population density of only 0.3, Camorta (57.91 sq. miles) with a density of 10.7 and Car Nicobar (49.02) a density of 170. All the other islands have an area of less than 50 square miles but some of them have a high density of population.

A list of the names of the islands, their native names, area, population and density is given below.

No	Geographical name	Native name	Area in sq. miles	Population	Density
1.	Car Nicobar	Pu	49.02	8374	170
2.*	Batti Malv	Et	0.80		
3.	Chowra	Tatat	2.80	1076	358.7
4.*	Tillanchong	Loak	6.50		
5.	Teressa	Taihlong	34.00	523	15
6.	Bompoka	Poahat	4.80	73	18
7.	Camorta	Nankauri	57.91	618	10.7
8.	Trinkat	Laful	6.40	118	19.6
9.	Nancowry	Nankauri	19.32	322	17
10.	Katchall	Tehnyu	61.70	493	9.5
11.*	Meroe	Miroe	0.20		
12.*	Trak	Fuya	0.10		
13.*	Treis	Taan	0.10		
14.*	Menchal	Menchal	0.50		
15.	Little Nicobar	Ong	57.50	197	0.3
16.	Pulo Milo	Miloh	0.40		
17.	Kondul	Lomangshe	0.50		
18.	Great Nicobar	Loong	333.20	161	0.48
19.*	Cabra	Konwana	0.20		

Of the 19 islands, 12 are inhabited and the rest with * mark are not inhabited. The above table depicts some very interesting features of the human agglomeration in these group of islands. Within such a small run of space the physical environment does not account for such tremendous variations but historical background and the traits of the people determine them to a large extent.

The height of the Nicobar group of islands is not much and only in a few islands the height exceeds more than 1000 feet. The islands being a continuation of the Arakan Yoma show some important feature of the relief—the island of Batti Malv has the minimum height of 150 feet and as one moves towards the northern or the southern islands the height gradually increases (see page 21). The Great Nicobar is hilly compared to the other islands.

The geological explorations have been made by Dr. Rink, Dr. Hochstetter and Dr. Valentine Ball and in spite of the absence of any complete agreement in their observations, it has been agreed upon that the sandstones and shales of the southern islands are akin to the Port Blair Series of the Andamans in which poor lignite coal is embedded and some of the islands in the north e.g. Chaura, Pulo Milo and the littoral fringe of Car Nicobar are coral in formation of a recent date.

The islands experience a heavy amount of rainfall and high temperature by virtue of their location in the low latitudes. Climate is typically hot and humid. The impact of both the monsoons is felt—easterly and southeasterly gales from November to January and the southwest gales from May to September and smooth weather is experienced only for a part of the year from February to April and also in October. However such hot and humid conditions have given rise to the predominance of malaria in many parts of the islands.

The natural vegetation is obviously tropical but the important species of the Andaman forest such as padauk and garjan are not found though some of the trees are quite valuable for commercial purposes such as the soft timber of the coconuts which is used for the matchwood besides fairly large areas under coconuts, areca palms etc.

The islands have been brought to the limelight from a sufficiently old date and the earliest records of these islands can be gathered from the notes of Ptolemy in the 2nd century A.D. The islands show a remarkable affinity with the mainland of India which are evidenced partially in the origin of the people and also form the names of a few rivers and villages such as *Ganga*, a stream in Great Nicobar, *Lakshmi*, the name of village in Teressa. Though the islands have been colonised by the missionaries since the 17th century, their attempts have been largely futile with their ultimate abandonment of the islands. However most valuable accounts and findings have been made available by them.

The arrival of the missionaries has been in vogue since the 17th century and the Danish missionaries came in batches one after another. In the long run the islands were ultimately transferred to the British Government in the year 1869. The Danish possession of the islands for colonisation was preceded by the arrival of a few groups of missionaries. The attempts for colonisation had however failed and the colony was abandoned in the year 1759. The Moravian Mission was invited by the Danes later on who had stayed in the islands from 1768 to 1787. The success achieved was little and the climatic unsuitability was all the time acutely felt which had led to the withdrawal of the Danes in 1773. On

the withdrawal of the Danes, the Moravian missionaries had to undergo tremendous troubles. The Austrians arrived in the year 1778 and stayed for only 3 years. This was followed by further attempts of the Moravians during 1790 and 1804, possession of the islands by the British Government during Napoleonic Wars (1807—1814) and was again transferred to the Danes through a treaty. Occasionally a few other missions of the Italian and French Jesuits had arrived in the islands but their stay had been for an extremely short period. A scientific expedition was carried in the year 1846 in the *Galathea* which, however, proved fruitless and the Danes relinquished sovereignty. Again in 1848, the Austrian ship *Novara* brought an expedition. None of the findings of these expeditions were hopeful. Ultimately through an amicable negotiation, the British Government had taken possession of the islands in the year 1869 and a penal settlement, subordinate to that at the Andamans, was established in the year which was, however, withdrawn in the year 1888. Since the year 1871, the islands are administered by a Chief Commissioner. During the years 1942-45, the islands were under the Japanese occupation and since the independence of India, the Andaman and Nicobar islands have been grouped as a D class state and is administered by a Chief Commissioner.

The people of the Nicobars are distinctly different from that of the Andamans in spite of the closeness to each other. Though the origin of the Nicobarese is a matter of speculation owing to the lack of any written literature or memory, some historical evidences prove their affinity with the Indians coming down from the eastern part of India. The fantastic legends prevailing in Car Nicobar depicts the canine origin of the Nicobarese. One such legend apprehends the occurrence of one cataclysmic flood which caused a complete devastation of all the people excepting one person only who saved himself by climbing upon a tree and subsequently, the sexual union with a bitch, the only survivor of the mammals, gave birth to the Nicobarese race. The other legend is also equally fantastic and refutes the biological possibilities. A Burmese Princess had a sexual union with a dog and for this act she was driven to these islands. The dog was killed before the birth of the child and the sexual union with the male child gave birth to the Nicobarese. Undoubtedly these legends are sheer tales of impossibilities causing a considerable undermining of the dignity of the Nicobarese.

There are some remarkable evidences of the affinity of the Nicobarese with the people living in the submontane regions of Eastern India. Mention about these people—the *Lojenke* is found in the notes of I.

Tsing (672 A.D.) the *Lankabhalus* of the Arab Mariners, and *Necuveram* of Marco Polo. In all such notes the primitive mode of life of these naked people living on roots of trees have been mentioned. The Hindu Mythology provides a satisfactory clue to the origin of these people. They are supposed to belong to the great race of Banaras and some of the remarkable affinities with the Banaras have been pointed out by Sri Gupta.¹ Here again the meaning of Banaras, signifying monkeys, has been refuted in place of Ba-nara signifying near-cultivation.

The Nicobarese being secluded and confined to a small group of islands and extending over a very small areal extent, have developed considerable distinctions in the different groups of the islands, partially arising out of the micro-geographical environment. The differences in their languages are conspicuous. Two broad divisions are remarkably well defined—the Nicobarese and the Shom Pens. The latter inhabiting the highlands of Great Nicobar have remained virtually within their own crude economy because of their complete isolation and within a remarkably short time, there has been a rapid decline in their numbers, very much unlike the Nicobarese, who are experiencing a rapid growth in numbers. The Nicobarese, within the scope available in our study may very well be generalised though their regional variations are quite appreciable.

Shom-Pens

The biggest of all the islands, the Great Nicobar is the abode of the Shom Pens. The existence of these aborigines was detected in 1831 by a Danish Missionary and later on a number contacts have been made. The first recorded visit is of Admiral Steen Bille (1846) followed by visits of Dr. Roepstorff (1881), Mr. Man (1884), Boden Closs (1901) and C. W. B. Anderson (1905). Sometimes back, Sri B. S. Chengapa led an expedition among the Shom Pens of Great Nicobar and has presented a good account of his observations among these people.

The appreciable differences in the appearance of the Shom Pens from that of the Nicobarese are the darker complexion, smaller stature and the growth of hairs in different shades from being curly to straight in the case of the former. Some of the evidences prove the widespread occurrence of the Shom Pens which at present has dwindled down to a few areas and limited number.

The presence of such a group of people in this island, being appreciably different from the Nicobarese both in physical as well as cultural characteristics, has been accounted for by the admixture of the foreign blood with the Nicobarese who have further developed their singularity

because of their isolation. It is believed that a party of the Andamanese was stranded in this island and got mixed up with the local people giving birth to the Shom Pens whereas, another belief, much more probable, is that the Dravidian mariners in their voyages to the eastern archipelago got incorporated with these people.

A small group of Shom Pens known as 'Mawas Shom Pens', meaning quiet and tame Shom Pens lives in areas close to the coastal regions along the river valleys of Jubilee, Dagmar, Alexandra, Galathea. They are friendly and timid in nature. All the past contacts with the Shom Pens have been with these people. Whereas, the larger section of the Shom Pens, inhabiting the interior of the islands, are hostile and have been all the time in constant feuds and arrogance with the other group and with the Nicobarese who live in the coastal areas.

The widespread occurrence of the Shom Pens is evident from the presence of a large number of abandoned gardens which were previously devoted to the production of crops and also from the records available since the contact of the foreigners with these people. In the absence of any thorough contact, the number of the Shom Pens are largely based on guess work. Boden Kloss in the year 1905 estimated the number at 300 to 400. In subsequent years there has been a considerable decrease in the population because of the ravages of influenza and poliomyelitis. Chengapa who conducted an expedition among the Shom Pens advocates a number of not more than 100 though his contact was with only 48 persons, of whom 14 are men, 21 women and the rest 13 are children. Such a figure is maximum with the apprehension that half of them could not be contacted. The Shom Pens appeared to be very much sick and weak and especially the women. His account of the expedition gives the exact number of Shom Pens contacted in the different areas, which conclusively proves the great decline of these people.

The mode of living of these people are undoubtedly very primitive. Nevertheless it is higher than that of the Andamanese. Domestication of plants and animals is practised besides the fishing and hunting. Craftsmanship has developed. Production of crops is in practice and the remnants of the gardens even in the hilly areas speak not only of a greater density of these people in the past but also of their thriving economy. Further characteristics of their economy are evidenced from the practice of bartering a number of commodities with the coastal people.

As these people wander from place to place, no permanent houses are built by the Shom Pens as is the case with the Nicobarese. The shelters are huts of very crude form which are built up on piles varying

in height from 3ft. to 8ft., with a rough platform and a rough roof of palm leaf. However, Chengapa noticed only one abandoned permanent hut of the like of the coastal people near Trinkat Champlong Bay on the East Coast being raised about 6ft. above the ground.

Pandanus are their staple food besides pigs, chicken and fish. The pandanus are raised in a very primitive way and are cooked in a boat-shaped vessel with a length of 5ft., height of 2 to 2½ ft. and width of 2 feet. The friendly tribes domesticate the dogs, cats, pigs and chickens. Drinking water is collected in jugs from the streams having crystal clear water.

The Shom Pens prepare their clothes from the bark of two species of *Ficus*. They construct small outrigger canoes for carrying only 2 or 3 persons and javelins for the hunting. They are also fond of gardening and many gardens being 60 to 70 years old along the river banks were devoted to the production of coconuts, betel nut, palm and lime trees which remain abandoned to-day. However, there are many new gardens extending over ½ acre to 1 acre which are producing very good quality of banana, tapioca, colocasia, tobacco, yams and pandanus. The cultivation of the crops is practised by sticks having strong pointed ends.

A fairly good number of foreign articles have been incorporated by these people and the source of availability is by bartering with the coastal Nicobarese the splitting of canes in exchange of commodities like garments, beads, knives, axes, tobacco etc.

On the whole the economy of the Shom Pens represents a primitive subsistence economy, which is, however, higher than the stage of hunting and collecting, as practised by the Andamanese. Though the evidences of their greater number is well within view their decline is taking place with considerable rapidity.

The Nicobarese

The Nicobarese inhabiting these small islands have, however, attained considerable individuality in each group, a very important development discernible in areas of isolated culture which are conditioned by the local geographical environment and historical incidents. Though the intermixing and even intermarriage among these tribal groups are not prohibited, every group is, however, conditioned by their local environment and interests. Their distribution is also highly uneven in nature and only in the two islands, the Car Nicobar and Chowra that the density of population is quite high. There has been a differential amount of foreign influence leading to a considerable influence of the foreign languages

on their own and to-day there are such great differences in their languages that one group does not understand the other group. In spite of the underlying unity of culture, diverse factors like environment, their contact with the foreign people etc. have been responsible for such a variation. Such variations are observed not only in their dialects which have become so differentiated from one region to another that there are as many as 6 different kinds but also in their social and cultural lives. "Little and Great Nicobar inhabitants have absorbed a Malayan tongue to such a considerable extent that they are now almost unintelligible to the Car Nicobarese. Again the people in Champi, in Nancowry evince a gaiety and cunning of port people quite contrary to the quiet, happy and care-free existence of the Car Nicobarese. The Teressean with his long tuft of hair and a nervous look is a poor specimen of humanity and can be easily disowned by his tribesmen of other islands. Chowra however retains the essential Nicobarese culture in its purest form, mainly due to its inhospitable coastline and aversion of people. The superior brains, craftsmanship and industry of the people of this very congested island have given them an easy moral ascendancy over the rest."

The Nicobarese are healthy people. The measurements of E. H. Man are given below which will signify their well-balanced development.

Average Measurement in inches.

	Height	Full Span	Seated Height	Foot	Chest	Weight in lbs.
MEN	... 63½	67	33½	9½	34½	136
WOMEN	... 60	61	31½	8¾	...	118

The marriage which takes place due to continued affection resulting from courtship is performed through the negotiation of the parents of both the sides. After the marriage, the couple may either live in the bride's or bridegroom's house depending upon the need of the helping hand in any family. If there is the need for a helping hand in the bride's home, the couple live there. Dowries are given to the wife's people. As a religious rite, their heads are shaved off during the marriage and they are confined in an enclosed place for 7 days. Adultery is considered as a grave crime against the society.

The religion is undistinguished animism. In their community life there is an abundance of ceremonies and festivals which are mostly aimed at exorcising and scaring spirits. They are highly afraid of the spirits and ghosts (iwi) and the festivals are held during the night. The superstition

is so deeply ingrained among the Nicobarese that the efforts of eradicating them have proved fruitless.

The persons who are charged for serious offences such as murder, habitual theft and public annoyance are put to death with great cruelty in public. However, such devil murders of the Nicobarese are gradually decreasing. Still now, however, a large number of taboos condition their activities. Witches and witch-finders still now abound in numbers.

The Nicobarese because of their contact with the foreigners from different parts which continued for varying length of years has acquired an appreciable impress which is very much discernible in their languages. Of the many languages, Portuguese, English, German, Malay and Chinese which had been in vogue in the islands, English, Burmese and Hindustani are well-understood.

The extremely uneven nature of the distribution of population is a remarkable feature of the islands. Some of the smallest islands, the Car Nicobar and Chowra have the maximum agglomeration and in consequence, the highest density. Whereas some of the bigger islands are considerably under-populated not only in terms of the area but also in that of resources. The Nicobarese population has been experiencing a healthy increase in numbers, if not otherwise hampered by some natural calamities. In the table given below, the population of the islands during the census years for the last 50 years has been given.

Population of the Nicobar Islands During The Last 50 Years.

	1901	1911	1921	1931	1941	1951
Car Nicobar ...	3451	5550	6087	7182		8274
Chowra ...	522	348	234	615		1076
Teressa and Bompoka ...	702	656	640	506		523
East Katchall ...						73
West Katchall ...						249
Camorta ...	1095	1165	1071	1041		244
Trinkat ...					1551	618
Nancowry ...						118
						322
Little Nicobar ...						197
Kondul ...	192	272	216	245		47
Great Nicobar ...					405	161
Total ...	5962	7991	8248	9589	12452	12002
Less Indians ...	348	375	375	200		20

Source: Census of India, 1951.

Some of the outstanding features of the Nicobar Islands may be summed up from the above table. There has been a great increase (100%) of the Nicobarese population during the last 50 years but the rates of increase in the different islands are appreciably different. All the islands have experienced increase except Teressa and Bompoka. For all the islands combined together there has been a gradual increase, experiencing a slight decrease in the 1951 census because of the ravages of poliomyelitis in 1947-48 and also for the murder of the English knowing Nicobarese youths of Car Nicobar by the Japanese. The population has, however, more than doubled in the northern islands of Car Nicobar and Chowra, whereas, in the Central and southern group of islands, the population has increased by 50% and 200% respectively. The density of the islands of Car Nicobar and Chowra with a trend of appreciable increase, is exceeding the capacity of the resources of these small islands, which demand a dispersal of these people to some of the less populated islands in the south.

The economy is still now primitive though within the islands and abroad, specialisation in the production of different commodities and a fair degree of corporate life in the community are maintained for the benefit of the individual and the community. The occupation of the Nicobarese is hunting and collecting of the foodstuffs from the forests and seas. They gather coconuts which form the staple product, uproot yams and undertake fishing. The staple diet is prepared by boiling coconut, kernel, pandanus, banana and yam which looks like cheeselike pulp and it can be preserved for a fairly long time. In some parts the consumption of rice is gradually increasing because of the introduction of this crop by the foreigners. Still now, due to the Chinese smuggling, rice has been an essential requirement of diet in Nancowry. The other items of foodstuff are pig, chicken and fish. Coconuts are however the main food crop and because of the excess production a considerable amount is exported outside. Approximately 18-20 million coconuts are produced annually of which half is consumed locally and the rest are exported. Car Nicobar shares half the amount of trade and the rest half by the other islands. When a sufficient amount of foodstuff has been collected, the Nicobarese enjoy their time by swimming, wrestling and by racing with their canoes and feasting with their friends.

The houses are clustered together in one place and are very neat and clean. In all the villages, a guest house 'All panam' is built on the sea beach for the use of the travellers. A co-operative trading society called 'Panam Hineng' exists in Car Nicobar for the sale of the village produce

and such facilities are extended in the other islands by Govt. agents. However, for the southern islands the trade was virtually in the hands of Chinese from Malay and the Govt. agents are substantially improving the situation. The Nicobarese are very peaceful type of people having a great fascination for colourful dresses, dances and other social recreations.

Trade, as has been said earlier, is mostly for the bartering of coconuts. At present the Government Agents in the central and southern group of islands are looking after the successful functioning of the trade. Specialisation in the production of some commodities in particular islands has given rise to internal trade. The availability of timber for the ocean-going canoes from the forests of Great Nicobar has resulted in the specialisation of construction of canoes in the island and the final preparation is made by the people of Chowra, because of their specialised skill and dexterity. In Chowra, pottery has developed which has been tabooed in the other islands. Even without the aid of wheels, the earthen pots are good looking and durable. As the local supply of clay is exhausted, it is brought from Teressa.

The whole group of islands has a good deal of differential development. The northern islands of Nicobar and Chowra are by far the most developed of all the islands. The more one moves to the south, the more is the degree of underdevelopment and the need for dispersal of the population to some of these less populated islands of the south will undoubtedly even out this disparity to a great extent. These tropical islands depict wonderfully the primitive nature of life, subjected to the local geography, experiencing a healthy and peaceful growth.

BIBLIOGRAPHY

BONINGTON, M.C.C.

—The Andaman and Nicobar Islands, Census of India, 1931.

BROWN, A.R.

—The Andaman Islanders.

CHIBBER, H. L.

—The Geology of Burma.

CIPRIANI, L.

—Survey of Little Andaman during 1954, Bull. Anth. Dept.

COOK, E. K.

—Ceylon, 1951.

DE, SILVA, S. F.

—The new Geography of Ceylon, 1945.

GANESH, K. R. (Secretary, Andaman Indian Association)

—Memoir to the Parliament on the situation of the Andaman and Nicobar Islands, The 6th May, 1952.

GHOSH, A. K.

—The Andaman & Nicobar Islands, Census of India, 1951. (Vol XVII).

GOUROU, PIERRE

—The tropical World, Its Social and Economic conditions and its future status, Longman, Green & Co., Second Impression, 1954.

HERRE, ALBERT, W. C. I.

—A list of fishes known from the Andaman Islands.

IMPERIAL GAZETTEER OF INDIA, VOL, XIX, 1908

JENNINGS, I. W.

—The economy of Ceylon, 1951

KAUDERN, W.

—Notes on the Geographical Distribution of the Pygmies and their possible affinities, Etno. Stud. 9, 1939.

KLOSS, BODEN

—In the Andamans and Nicobars, London.

KRISHNAN, M. S.

—The Geology of India and Burma.

KURZ, S.

—On the vegetation of the Andaman islands, Calcutta.

MALLET, F. L.

—On some of the mineral resources of the Andaman Islands in the neighbourhood of Port Blair. Rec. G. S. I. Vol. XVII. 1884

MILLER, A.

—Climatology, Methuen, London.

MOLENGRAAF, G. A. F.

—Modern Deep Sea Researches in the East Indian Archipelago, Geog. Jour, 1921.

NIGAM, R. C.

—Little known tribes of the Andaman Islands, their problems & prospects; Vol VIII, Nos. 1, 2 & 3, 1960.

ROEPSTORFF, F. A. DE.

—Vacabulary of dialects spoken in Andaman & Nicobar Isles. 2nd Edition, Calcutta, Office of the Supdt. of Govt. printing, 1875

THE ONGE OF THE LITTLE ANDAMAN.

—A short guide book, Anthropological Gallery, Indian Museum, Calcutta.

OLDHAM, R. D.

—Notes on the Geology of the Andaman Islands. Rec. Geol. Sur. of India, Vol 18, Part 3, 1885.

PORTMAN, M. V.

—A history of our relations with the Andamanese. Govt. of India, Supdt. of Govt. printing, 1889.

ROY, S. C. AND ROY, A. K.

—Structure and Movement of Cyclones in the Indian Seas.

SARKAR, S. S.

- The Origin and Migration of the Negritoes in the Andaman Islands, *Man in India*, vol. 33, Nov. 1953.

SINGHA, S.

- Types of Human Adaptation in the Andamans; *Geog. Review of India*, Sept. 1952. No. 3, vol XIV.
- Resettlement of East Pakistan Refugees in Andaman Islands. 1955.

SEN GUPTA, BENU

- Andaman Sea treasures, *A. B. Patrika*, 31st July, 1958.

SPATE, O. H. K.

- India and Pakistan, Methuen, London.

SEN, P. K.

- Some Aspects of the Recent colonisation in the Andamans *Geog. Rev. of India*, December, 1958.
- A study of the population of the Andamans; *Indian Geographer*, New Delhi, 1960.
- Agriculture in the Andamans, *Geog. Rev. of India*, Calcutta.

SHIVDASANI, H. R.

- Report on the possibilities of colonisation and development of the Andaman and Nicobar Islands, 1949. (Government of India, Ministry of Home Affairs).

SHANAHAN, E. W.

- South America, *An Economic and Regional Geography with an Historical Chapter*, Methuen, London.

SEWELL, R. B. (1925)

- Geography of the Andaman basin, *Geographic and oceanographical researches in Indian Waters*; *Mem. Asiatic Soc. Bengal*, Vol. No. 1

TIPPER, G. H.

- The Geology of the Andaman Islands with reference to the Nicobars. *Mem. Geol. Sur. of India*, Vol. 35, Pt. IV.

TREWARTHA, G. T.

- Japan, A Physical, Cultural and Regional Geography.
- An Introduction to climate.

TURNER, C. H.

- Note on the Andaman Islands from existing information, 1882.

WADIA, D. N.

- The Geology of India.

WHITEHEAD, GEORGE.

- In the Nicobar Islands ; London ; Seeley, Service & Co. Ltd.

THE A. B. PATRIKA, CALCUTTA.

THE STATESMAN, CALCUTTA.

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